

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HEAD SPORT GMBH,
Petitioner,

v.

VERMONT SAFETY DEVELOPMENTS LLC,
Patent Owner.

IPR2024-01099
Patent 7,523,953 B2

Before BARRY L. GROSSMAN, MITCHELL G. WEATHERLY, and
ROBERT J. SILVERMAN, *Administrative Patent Judges*.

GROSSMAN, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Petitioner Head Sport GmbH (“Petitioner” or “Head Sport”) filed a Petition (Paper 1, “Pet.”) pursuant to 35 U.S.C. §§ 311–319 to institute an *inter partes* review of selected claims in U.S. Patent No. 7,523,953 B2 (Ex. 1001, “the ’953 patent”). Pet. 1. The selected, challenged claims are claims 30, 31, 34–38, 53–56, and 58–60. *Id.* Patent Owner Vermont Safety Developments LLC (“Patent Owner” or “Vermont Safety”) filed a Preliminary Response (Paper 10, “Prelim. Resp.”) opposing institution of review.

We authorized additional briefing to address alleged improper incorporation by reference. *See* Paper 7. Accordingly, Petitioner filed a Preliminary Incorporation-by-Reference Reply (Paper 8, “Prelim. IR Reply”), and Patent Owner filed a Preliminary Incorporation-by-Reference Sur-reply (Paper 9, “Prelim. IR Sur-reply”).

We also requested the parties to file additional briefing regarding construction of the claim term “release logic.” Paper 11 (Claim Construction Order). In response, Petitioner filed a Preliminary Claim Construction Reply (Paper 12, “Prelim. CC Reply”), and Patent Owner filed a Preliminary Claim Construction Sur-reply (Paper 14, “Prelim. CC Sur-reply”).

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a) (2022) (permitting the Board to institute trial on behalf of the Director). To institute an *inter partes* review, we must determine that the information presented in the petition, any preliminary response, or other pre-institution briefing shows “a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). “The ‘reasonable

likelihood’ standard is a somewhat flexible standard that allows the Board room to exercise judgment.” Patent Trial and Appeal Board Consolidated Trial Practice Guide, 53 (Nov. 2019) (“TPG”).¹

Petitioner has the burden of proof. Petitioner’s burden does not change even if Patent Owner does not file a preliminary response, or files a preliminary response without addressing the substantive unpatentability assertions. *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.”). This burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

A decision to institute is “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition.” *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018).

In this proceeding, Head Sport argued for a specific claim construction of the term “release logic,” which we have *not* adopted. Vermont Safety took issue with Head Sport’s proposed claim construction, but did not propose its own construction. There is no agreed construction by the parties in this proceeding. Accordingly, all of Head Sport’s arguments and evidence in this proceeding are directed to a proposed claim construction for the challenged claims that does *not* apply in this proceeding. As we explain in detail in our claim construction analysis in Section III.D, under these circumstances, based on the record before us, Head Sport does

¹ The TPG is available at <https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf>.

not, and cannot, establish a reasonable likelihood that it would prevail with respect to at least 1 of the claims challenged in the petition. Thus, we do *not* institute the requested *inter partes* review.

II. BACKGROUND

A. Real Parties in Interest

Petitioner identifies itself as the real party in interest. *See* Pet. 95. Patent Owner identifies itself as the real party in interest. *See* Paper 4, 1.

B. Related Proceeding

The parties identify *Vermont Safety Developments LLC v. Head Sport GmbH*, No. 2:23-cv-00089-GWC (D. Vt.), as pending litigation involving the '953 patent. Pet. 95; Paper 4, 1. Upon a motion filed by Petitioner Head Sport, this District Court case has been stayed until we issue our decision whether to initiate a full trial in this IPR proceeding. *See* Ex. 2004.

Related to the dispositive claim construction issue, we note that in arguing for the stay, Head Sport asserted that the District Court should allow this Board to first determine whether to institute an IPR proceeding “under any [claim] construction the PTAB [chooses], and that’s their job. Their job is to construe their claims.” Ex. 2002, 8:16–18. Head Sport made this argument to the District Court on August 2, 2024. *Id.* at 1.

Sixteen days prior to making this argument, on July 17, 2024, the parties filed a in the District Court a Joint Claim Construction Statement, in which the parties asserted substantively different claim constructions for the claim term “release logic.” *See* Ex. 2001, 3 (stating the parties’ proposed, and substantively different, claim constructions for the term “release logic”). Head Sport never advised the District Court that its claim construction asserted in its Petition for an *inter partes* review was different from its claim construction asserted in the Joint Claim Construction Statement (Ex. 2001).

In granting the stay, the Court stated:

In sum, the court concludes that the relevant factors and circumstances favor a stay in this case. . . . The possibility of significant simplification and the relatively minimal proceedings in this court thus far weigh in favor of a modest stay. . . . At minimum, a ‘modest delay’ is appropriate pending the PTAB’s decision on institution.

Ex. 2004, 10–11 (citation to Court record omitted).

C. The ’953 Patent

The ’953 patent issued on April 28, 2009 and claims priority to U.S. Provisional Application No. 60/836,454, filed on August 8, 2006. Ex. 1001, codes [45], [60]. The patent is titled “Alpine Ski Binding System Having *Release Logic* for Inhibiting Anterior Cruciate Ligament Injury.” Ex. 1001, code [54] (emphasis added).

As stated above, the Board requested supplemental claim construction briefing “providing a specific construction for the claim term ‘release logic,’ including a statement as to whether the term is, or is not, a “means-plus-function” limitation governed by 35 U.S.C. § 112(f).” Claim Construction Order, 4.

The ’953 patent discloses “[a]n alpine ski binding system for releasably securing a ski boot to a ski.” *See, e.g.*, Ex. 1001, code [57]. As further explained in the Abstract:

The binding system includes a *secondary toe release* that provides an *attenuated release threshold* under lateral shear loading conditions that can cause anterior cruciate ligament injuries. The secondary toe release responds to a trigger that senses the lateral shear loads applied to the inside (medial) afterbody of the ski and triggers the secondary toe release [to release] the boot at an attenuated release torque.

Id. (emphasis added). Thus, the disclosed and claimed ski binding system includes two release levels, a first force release and a second attenuated, or lower, force release. According to the '953 patent, the second, attenuated, force release provides improved protection against anterior cruciate ligament [ACL] injuries.² *E.g.*, see Ex. 1001, 1:63–2:12.

The Specification emphasizes that “[i]n particular, the present invention is directed to an alpine ski binding system having *release logic* for inhibiting anterior cruciate ligament [ACL] injury.” Ex. 1001, 1:15–17 (emphasis added). The term “release logic” is used fifty-one times in the '953 patent, and is included in all the challenged claims.³ *See, e.g.*, *id.* at 21:6, 17, 22, 26 (for independent claim 30).

The written description of the '953 patent, but *not* the claims, also uses various terms that employ the words “release” and “logic,” in some manner. These terms in the written description include:

“release-logic mechanism” (*e.g.*, *id.* at 3:14–50 (discussing Figs. 9A–16), and 9:11–36 (discussing “release-logic mechanism 912”));

“release-logic binding system” (*id.* at 16:37–64 (discussing electronic “release-logic binding system 2204”); and

“release threshold logic” (*id.* at 4:66).

As also explained below, we determine these various uses of the term “release logic” are distinctions without a substantive difference.

Figure 1 from the '953 patent is reproduced below.

² Cruciate ligaments are found inside the human knee joint. “They cross each other to form an X, with the anterior cruciate ligament (ACL) in front and the posterior cruciate ligament (PCL) in back. The cruciate ligaments control the front and back motion of your knee.” *See* Ex. 3002, 2.

³ This number is based on the results of a “find” command (“Ctrl f”) for the phrase “release logic” in Exhibit 1001 in this proceeding.

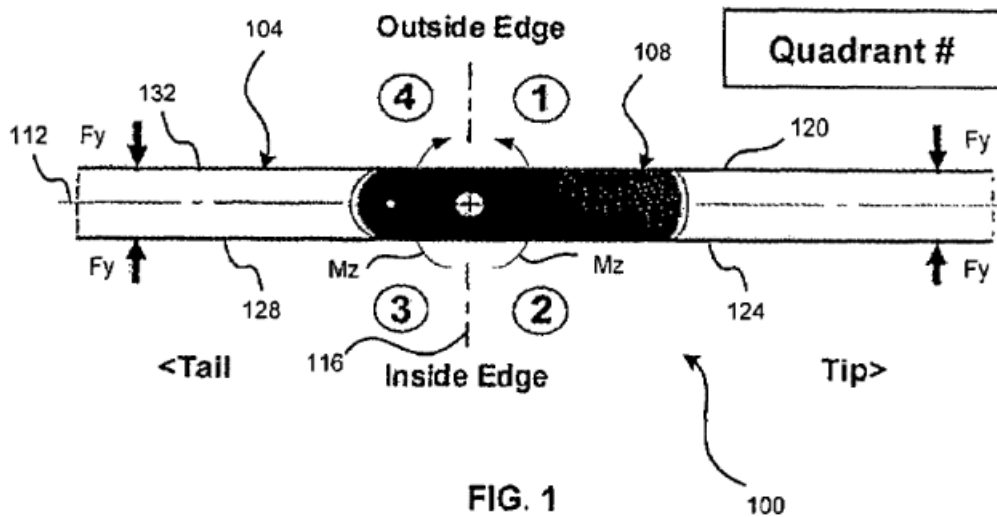


Figure 1 is a partial top view of a conventional left-leg ski illustrating naming conventions used in the Specification. Ex. 1001, 2:52–53. In particular, it identifies the four different “quadrant” areas of the left ski, which are quadrants 1–4.

As explained in the Specification, “[f]orces on ski 104 during skiing in each quadrant 1–4 produce a unique combination of force F_y and moment M_z at tibial axis 116, i.e., on the leg of the skier.” *Id.* at 5:42–44. As stated in the Specification,

[a] ski binding system made in accordance with the present invention is designed to recognize when loads on a ski are in quadrant 3 and respond by enabling release of the ski binding at a lower than normal release torque, as represented here as tibial moment M_z .

Id. at 44–49. To achieve this design objective, the ’953 patent relies on “an alpine ski binding system having *release logic* configured to have an attenuated release torque when a shear force is applied to the medial side of the ski, rearward of the tibial axis of the leg of a skier.” *Id.* at 4:13–17 (emphasis added). The ’953 patent explains that “this region [*i.e.*, the

medial side of the ski, rearward of the tibial axis of the leg of a skier] is denoted [in the '953 patent] for convenience 'quadrant 3,' 'Q3,' 'third quadrant,' or a like term." *Id.* at 4:17–18. The patent also explains that lateral shear loading conditions in this area can cause anterior cruciate ligament injuries. Ex. 1001, 7:15–20 (Q3 “appears to be the quadrant most implicated in ACL injury”).

Figure 5 from the '953 patent is reproduced below.

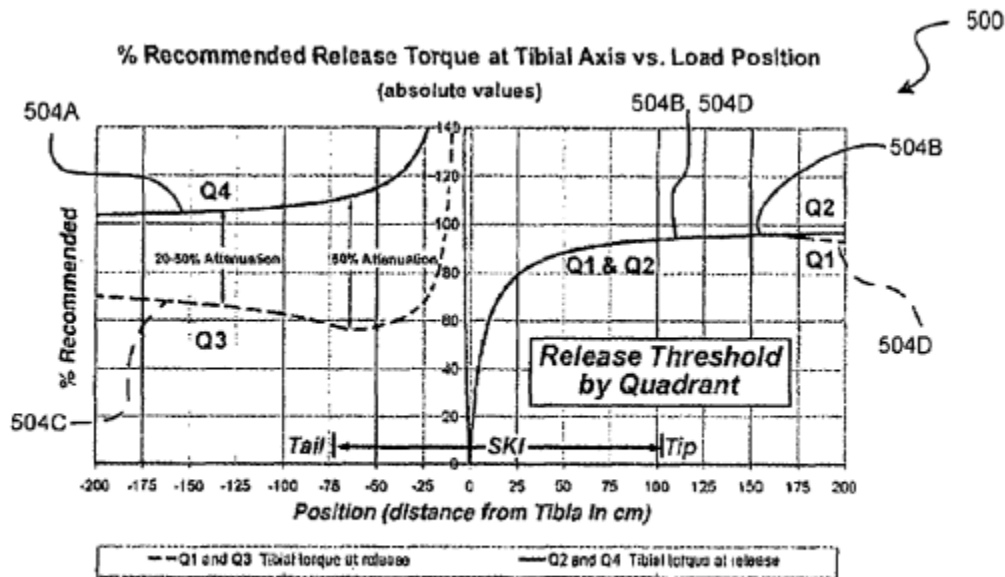


FIG. 5

Figure 5 is a “graph of a theoretical release envelope as seen relative to the tibial axis of a skier's leg, illustrating release/retention characteristics typical of a ski binding system having a third-quadrant attenuated secondary toe release [as shown at reference numeral 504C].” *Id.* at 3:3–6. The graph in Figure 5, while referred to as “theoretical,” also is stated to be “made in accordance with the present invention” disclosed in the '953 patent.

Id. at 7:1–4. As stated in the '953 patent, the ski system represented in Figure 5 “is able to distinguish loads applied in quadrant Q3 and provide an attenuated release (represented by release envelope portion 504C) relative to

the non-attenuated release (represented by release envelop 504A) relative to loads applied in quadrant Q4.” *Id.* at 7:4–9.

Figures 9A and 9B from the ’953 patent, annotated by Petitioner (Pet. 4), are reproduced below.

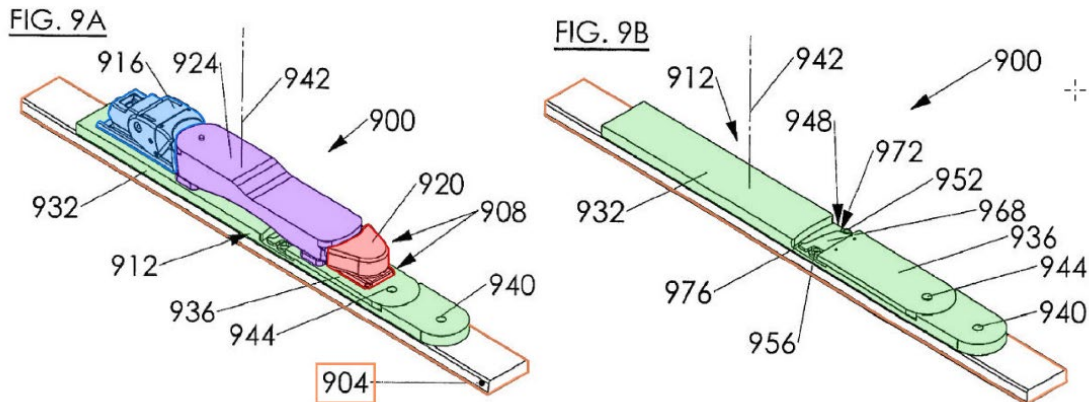


Figure 9A “is an isometric partial top view of a ski system that includes a third-quadrant release-logic mechanism of the present disclosure mounted to a left-leg ski, showing the mechanism in an *unreleased* state.” Ex. 1001, 3:14-17 (emphasis added). Figure 9B is a similar view, also in the unreleased state, with elements removed to show more clearly the structure that is the “release logic mechanism.”

As shown in Figure 9A, ski system 900 includes a left ski 904 and a binding system 908 that includes a third-quadrant “release-logic mechanism” 912 (shown in green), heel piece 916 (shown in blue), and toe piece 920 (shown in red). Ex. 1001, 9:11–13. Figure 9A also illustrates a ski-boot sole 924 (purple) clamped into binding system 908 in a conventional manner between heel and toe pieces 916, 920. *Id.* at 9:26–28.

Figure 9B shows the two primary components of release-logic mechanism 912, which are trigger platform 932 and secondary toe release 936. *Id.* at 9:34–36. The purpose or function of third-quadrant release-logic

threshold mechanism is referred to in the '953 patent as “attenuated release torque.” *Id.* at 10:8–10.

When trigger platform 932 is in a non-triggering position, such as shown in Figure 9B, secondary toe release 936 is held in the *unreleased* position shown in Figure 9B by a triggerable latch mechanism, such as latch mechanism 948. Ex. 1001, 10:10–14. Latch mechanism 948 includes latch 952 pivotably secured to trigger platform 932 at a pivot point 956. *Id.* at 10:14–16. Latch 952 includes opening 960, as shown in Figure 10B, that receives pin 964, which is fixed relative to ski 904. *Id.* at 10:16–18. In the *unreleased* position of secondary toe release 936, latch 952 engages catch 968 that is fixed to the secondary toe release. *Id.* at 10:18–20.

When trigger platform 932 pivots counterclockwise relative to ski 904 in response, for example, to a shear force in the third quadrant, latch 952 and its pivot point 956 move, thereby causing distal end 972 of the latch to move out of engagement with catch 968 on secondary toe release 936. *Id.* at 10:21–28. This allows secondary toe release 936 to pivot in response to a torque exceeding the secondary release torque, thereby releasing ski-boot sole 924 from binding system 908. *Id.* at 10:29–33.

The example discussed above is one preferred embodiment of the disclosed invention. As shown in Figures 12–24, and the related text in the Specification, the '953 patent makes clear that the “release threshold logic may be implemented in a number of ways using various mechanisms and/or electronics.” *Id.* at 4:65–67.

D. Illustrative Claim

The '953 patent includes sixty-one claims, fourteen of which are challenged in the Petition. *See* Ex. 1001, 18:31–26:21; Pet. 1 (Petitioner

requests *inter partes* review and “cancellation” of claims 30, 31, 34–38, 53–56, and 58–60 of the ’953 patent).

Of the challenged claims, claims 30, 53, and 58 are independent. Claims 31 and 34–38 depend, directly or indirectly, from claim 30. Claims 54–56 depend, directly or indirectly, from claim 53. Claims 59 and 60 depend from claim 58. Independent claim 30 is representative of the challenged claims and is reproduced below.

30. An apparatus for securing a ski boot to a ski so as to [form] a ski system, the apparatus comprising:

a ski binding assembly configured to be attached to the ski and to releasably secure the ski boot to the ski during use, said ski binding assembly having a first release, said ski binding assembly including *release logic* that causes the ski binding assembly to release the ski boot at said first release in response to a release condition, said ski binding assembly configured to:

assess, relative to a first axis, a first loading internal to the ski system caused by an external loading applied to the ski system; and

assess, relative to a second axis spaced from said first axis and substantially parallel to said first axis, a second loading internal to the ski system caused by the external loading;

wherein *said release logic is configured to:*

determine whether or not the release condition is occurring as a function of both of the first loading and the second loading; and

cause said ski binding assembly to provide said first release if the *release logic* determines that the release condition is occurring;

wherein said ski binding assembly is configured to determine a force-couple at a third axis from said first loading and said second loading, and *said release logic is configured to* determine whether or not the release condition is occurring as a function of the force-couple.

Ex. 1001, 21:1–28 (emphasis added to highlight the use of the claim term “release logic”).

E. Prior Art and Asserted Grounds

Petitioner asserts the following six grounds of unpatentability. *See* Pet. 7:

Claim(s) Challenged	35 U.S.C. §⁴	Reference(s)/Basis
30, 31, 34, 35, 37, 53, 55, 58, 59	103	Freudiger-1
36, 38, 54, 56, 60	103	Freudiger-1, Gulick
30, 31, 34, 35, 37, 53, 55, 58, 59	103	Dodge, Howell
36, 38, 54, 56, 60	103	Dodge, Howell, Gulick
58, 59	103	Sittmann
60	103	Sittmann, Gulick

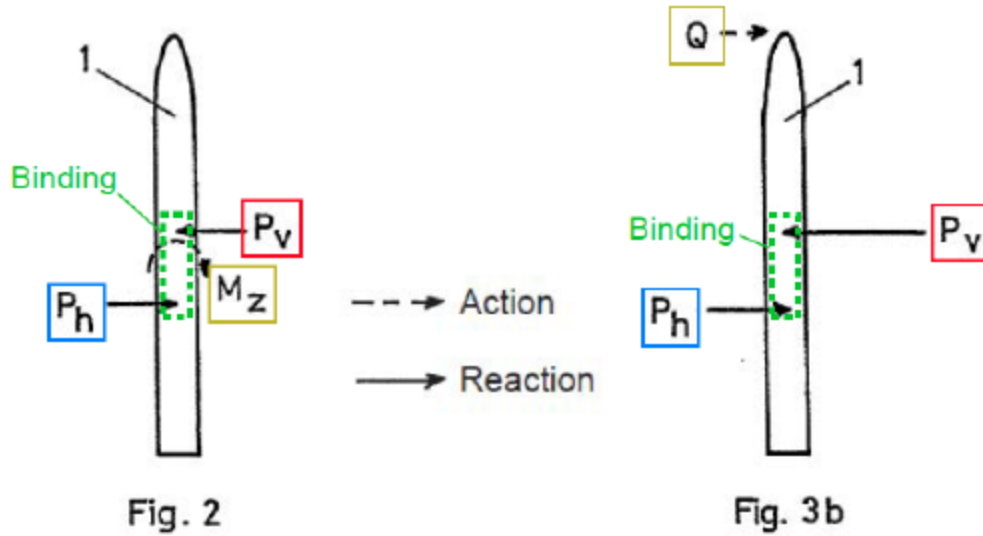
Petitioner also relies on the declaration testimony of Dr. Maury Hull, Ph.D. (Ex. 1002) in support of these grounds.

1. Summary of Freudiger-1

Freudiger-1 is a Swiss patent that issued on January 15, 1992 titled “Safety ski binding with automatic release force control.” Ex. 1003, codes (24), (54). Freudiger-1 “relates to a safety ski binding with automatic release force control” that “is able to distinguish pure torsion from lateral force torsion and to control the opening characteristics accordingly.” *Id.* at 1:3–7.

Petitioner provides the following annotated figures from Freudiger-1.

⁴ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 296–07 (2011), took effect on September 16, 2011. The changes to 35 U.S.C. §§ 102 and 103 in the AIA do not apply to any patent application filed before March 16, 2013. Because the application for the patent at issue in this proceeding has an effective filing date before March 16, 2013, we refer to the pre-AIA version of the statute.

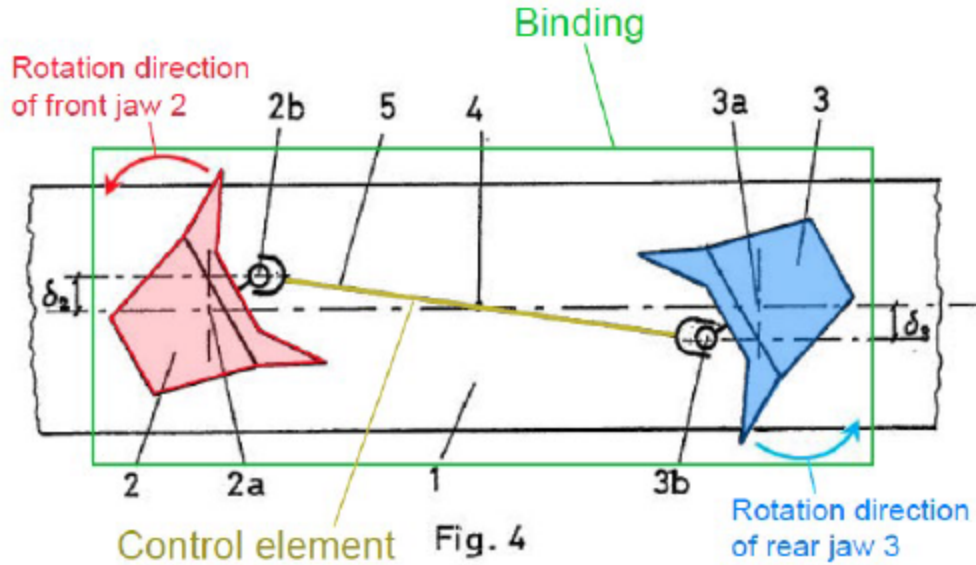


Ex-1003-Freudiger-1, FIG. 2
(pure torsion)

Ex-1003-Freudiger-1, FIG. 3b
(lateral force torsion)

**Figures 2 and 3b from Freudiger-1
annotated by Petitioner**

Figure 2 from Freudiger-1 “shows typical reactions at the location of a front (P_v) and rear (P_h) jaw of a safety ski binding when a torsional moment (M_z) is applied by the skier.” Ex. 1003, 2:31–34. Figure 3b depicts “a reaction, consisting of a torsional moment M_z and a lateral force Q ,” that “is divided into the reaction forces acting on the front 40 (P_v) and rear (P_h) jaws.” *Id.* at 2:37–40. Freudiger-1 explains that “in the case of the external torsional moment (Fig 2), the reactions P_v and P_h are of the same magnitude,” and “in the case of the external transverse force (Fig 3B) the reactions P_v and P_h 45 are of different magnitudes.”



Ex-1003-Freudiger-1, FIG. 4

**Figure 4 from Freudiger-1
annotated by Petitioner**

Figure 4 from Freudiger-1 “shows a front safety jaw (2) with the pivot point (2a) and a cam (2b) for driving the control element (5)” and “rear safety jaw (3) with pivot point (3a) and cam (3b).” Ex. 1003, 45–49. According to Freudiger-1, “[i]f the two jaws have the same 50 elasticity i.e., they are subject to the same deflections ($\delta_2 = \delta_3$) with the same forces (P), the center point (4) of the control element (5) remains on the ski axis under pure torsional load.” *Id.* at 2:49–53.

2. Summary of Gulick

Gulick is a journal article titled “Design of a Learning Binding for Alpine” and published in published in January of 2000. Ex. 1008, 30.⁵ Gulick “considers the feasibility of an alpine skiing [sic] binding with variable release settings that adapt to changes in the force magnitudes during skiing.” *Id.* (Abstract). Gulick describes that “[r]elease settings are

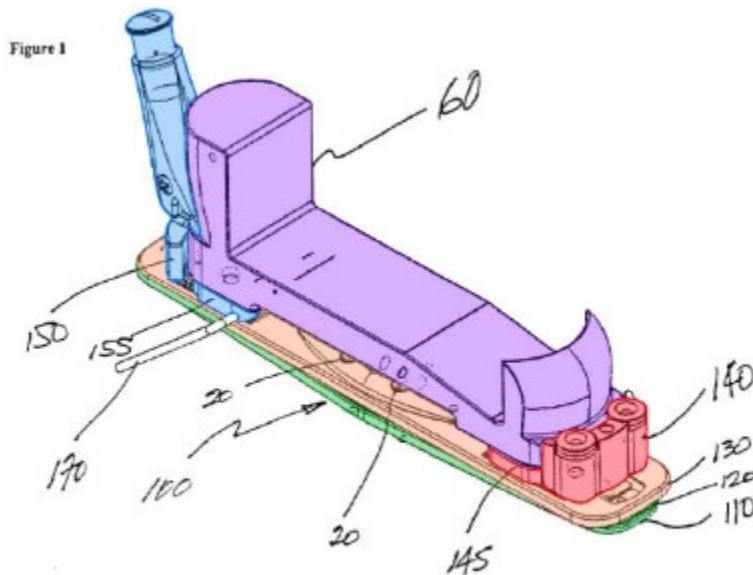
⁵ We refer to internal page numbering in Gulick.

determined according to difference equations involving previous and current force measurements.” *Id.*

3. Summary of Dodge

Dodge is a published US patent application titled “Ski Binding.” Ex. 1005, code (54). Dodge “relates to a safety binding for interfacing a ski boot to a ski or skiboard.” *Id.* ¶ 2.

Petitioner provides the following annotated figures from Dodge.

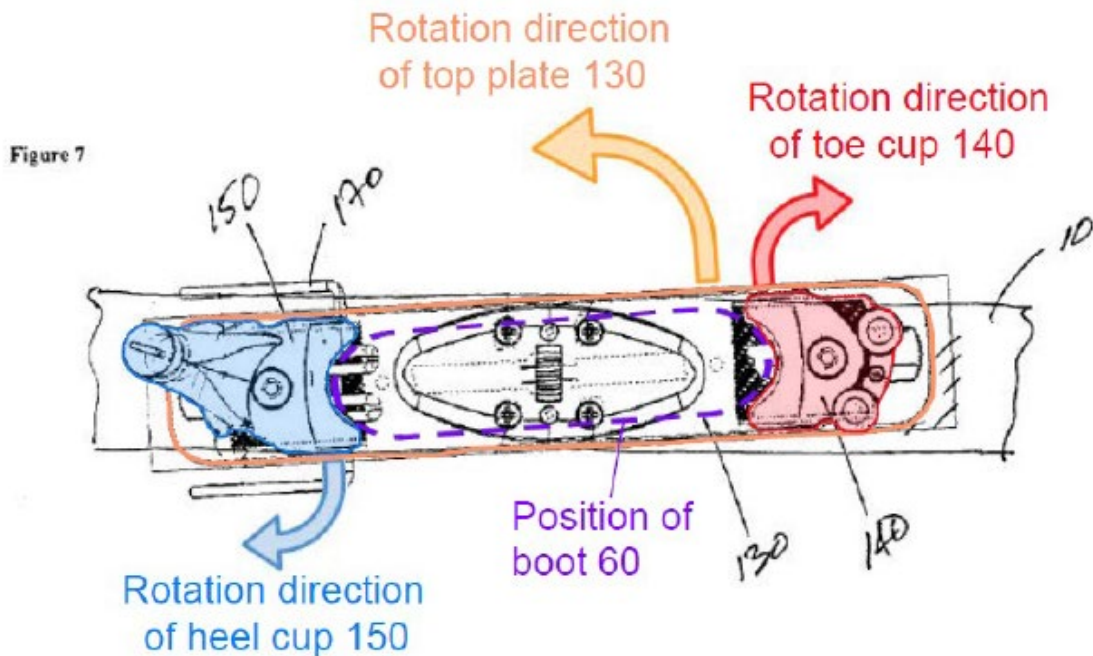


Ex-1005-Dodge, FIG. 1

**Figure 1 from Dodge
annotated by Petitioner**

Figure 1 of Dodge shows a binding 100 mounted on a ski 10 and separated from the ski by a bottom pad 110, which allows the ski to flex and makes sure that the ski is not harmed by the binding when flexing. Ex. 1005 ¶ 41. Resting on the bottom pad 110 is a static base plate 120. *Id.* Top plate 130 is mounted on top of the static base plate 120 in such a way that the top plate 130 can pivot laterally around the biasing means 180. *Id.* Mounted on the top plate 130 are the heel holding cup 150 and the toe

holding cup 140. *Id.* Dodge explains that the heel and toe cups work to hold a boot (shown schematically as 60) to the binding. *Id.* The heel cup 150 is also fitted with conventional boot release means 160. *Id.* The boot 60 rests on the heel pad 155, and the toe pad 145. *Id.* These pads are mounted on the top plate 130 such that any torque applied to the boot 60 is transmitted to the top plate 130. *Id.*



Ex-1005-Dodge, FIG. 7 (labels removed)

**Figure 7 from Dodge
annotated by Petitioner**

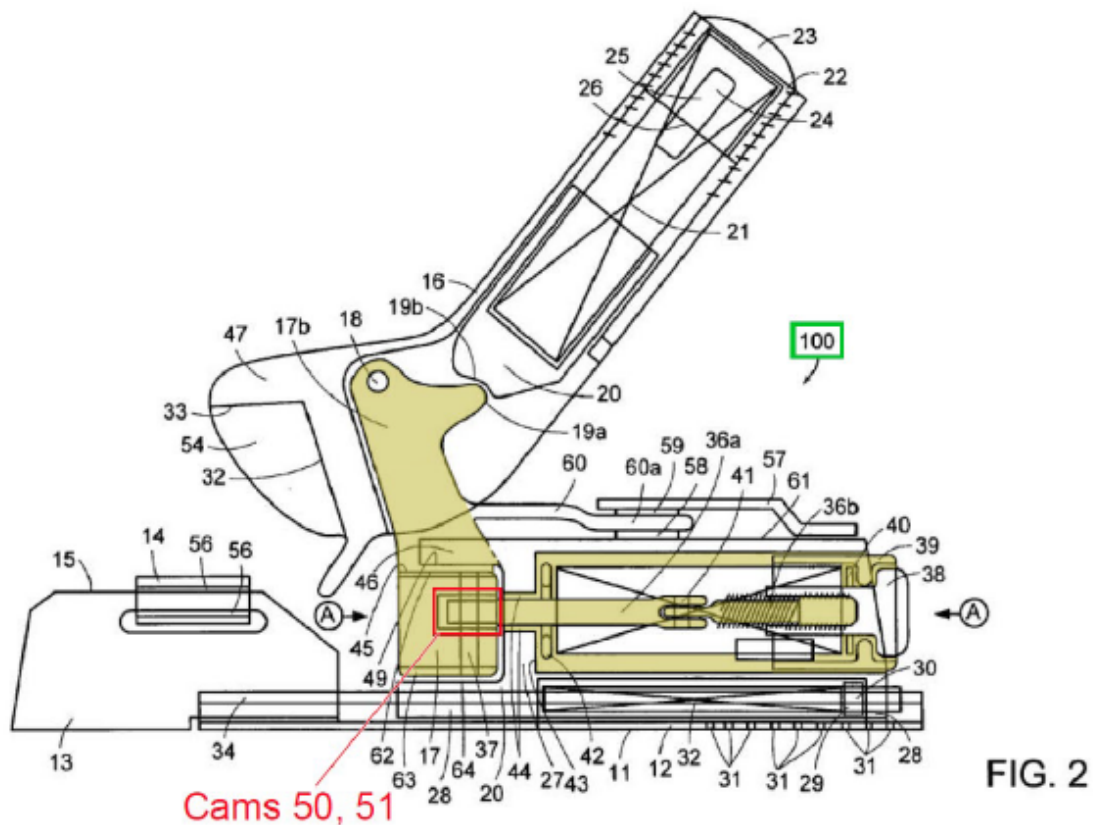
Figure 7 of Dodge illustrates how a twisting load on the forebody of the ski affects the top plate 130. Ex. 1005 ¶47. The top plate 130 pivots in a counterclockwise direction about the rear cam roller 192, the toe cup 140 and the heel cup 150 are pivoted in a clockwise direction about connecting means 142 and 152, thereby releasing the boot. *Id.* Alternatively, if the

twisting load is applied to the tail of the ski the top plate pivots about the front cam roller 191. *Id.*

4. Summary of Howell

Howell is a published US patent application titled “Alpine Ski Binding Heel Unit.” Ex. 1007, code (54). Howell “relates in general to alpine ski bindings and, in particular, to multi-directional release alpine ski binding heel units that release in the vertical and lateral directions.” *Id.* ¶ 2. Howell describes an alpine ski binding heel that includes a primary vertical release, lateral heel release and longitudinal pressure compensator. *Id.* ¶ 15.

Petitioner provides the following annotated figure from Howell.



Ex-1007-Howell, FIG. 2

**Figure 2 from Howell
annotated by Petitioner**

Figure 2 of Howell is a side view of an alpine ski binding heel unit and depicts an Upper Heel housing 16 that includes a pivot rod 18, cam surfaces 19a and 19b stem section 17b, lateral release cam assembly 17, vertical release cam follower 20, vertical release spring 21, threaded cap 22, window 24, polymer piece 25, surface 26, region 33, and heel cup assembly 47. Ex. 1007 ¶ 33. Lateral heel release cam surfaces allow the lateral release cam 17 to both rotate and translate relative to the lower heel housing 27, so that the heel area of the ski boot can displace laterally relative to the long axis of the ski. *Id.* ¶ 54.

5. Summary of Sittmann

Sittmann is a published German patent application titled “Safety Ski Binding.” Ex. 1006, 1.⁶ Sittmann “relates to a safety ski binding with a boot holder which, after overcoming a detent force, can be pivoted away from the boot around a transverse and/or vertical axis, thereby releasing it.” *Id.*

III. DISCRETIONARY DENIAL UNDER 35 U.S.C. § 314(A)

Patent Owner asserts we should exercise our discretion and deny institution under 35 U.S.C. § 314(a) based on the status of the Related Proceeding discussed in Section II.B of this Decision. *See* Prelim Resp. 61–66. Petitioner disagrees. *See* Pet. 91–94. As discussed in Section II.B, the related District Court proceeding has been stayed so that the Court could have the benefit of our analysis and determination in the IPR proceeding before us. *See* Ex. 2004 (stating the District Court’s reasons and analysis for issuing the stay). As the District Court stated,

only preliminary and minimal production has occurred thus far in this [District Court] case. No dispositive motion has yet been

⁶ We refer to internal page numbering in Sittmann.

filed, let alone ruled upon. No trial is currently scheduled, and the October 2025 date in the Second Amended Stipulated Discovery Schedule/Order is ‘[s]ubject to the timing of the Court's orders regarding claim construction and summary judgment, if any.’

Ex. 2004, 10.

The Court concluded that “[t]he possibility of *significant simplification* [from the determination in this IPR proceeding] and the *relatively minimal proceedings in this court thus far* weigh in favor of a modest stay.” *Id.* (emphases added).

Thus, based in part on the “relatively minimal proceedings” in the District Court, and the “[t]he possibility of significant simplification” for the District Court from our claim construction of the term “release logic,” we decline Patent Owner’s invitation to discretionarily deny the petition.

Moreover, we need not address Patent Owner’s contentions concerning discretionary denial because, as discussed below, Petitioner has not established a reasonable likelihood of prevailing on the merits in demonstrating unpatentability of any challenged claim of the ’953 patent. *See MillerKnoll, Inc. v. Aaron DeJule*, IPR2023-01428, Paper 8, 10 (PTAB March 22, 2024).

IV. PETITIONER’S GROUNDS OF UNPATENTABILITY

A. Legal Standards — Petitioner’s Burden

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic*, 815 F.3d at 1363 (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This

burden of persuasion never shifts to the patent owner. *See Dynamic Drinkware* 800 F.3d at 1378.

B. Legal Standards — Obviousness

Whether the challenged claims would have been obvious over the cited references also is at issue in this proceeding. Section 103 forbids issuance of a patent when “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when available, evidence such as commercial success, long felt but unsolved needs, and failure of others.⁷ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966); *see KSR*, 550 U.S. at 407 (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”). The Court in *Graham* explained that these factual inquiries promote “uniformity and definiteness,” for “[w]hat is obvious is not a question upon which there is likely to be uniformity of thought in every given factual context.” 383 U.S. at 18.

The Supreme Court made clear that we apply “an expansive and flexible approach” to the question of obviousness. *KSR*, 550 U.S. at 415.

⁷The parties do not direct us to any persuasive objective evidence of non-obviousness.

Whether a patent claiming the combination of prior art elements would have been obvious is determined by whether the improvement is more than the predictable use of prior art elements according to their established functions. *Id.* at 417. To support this conclusion, however, it is not enough to show merely that the prior art includes separate references covering each separate limitation in a challenged claim. *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). Rather, obviousness additionally requires that a person of ordinary skill at the time of the invention “would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention.” *Id.*

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

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

reaching the ultimate determination of whether the claimed invention as a whole would have been obvious.”).

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

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

C. Level of Ordinary Skill in the Art

The level of skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). “This reference point prevents . . . factfinders from using their own insight or, worse yet, hindsight, to gauge obviousness.” *Id.*

“The *Graham* analysis includes a factual determination of the level of ordinary skill in the art. Without that information, a . . . court cannot properly assess obviousness because the critical question is whether a claimed invention would have been obvious at the time it was made to one with ordinary skill in the art.” *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986); *see also Ruiz v. A.B. Chance*, 234 F.3d 654, 666 (Fed. Cir. 2000) (“The determination of the level of skill in the art is an integral part of the *Graham* analysis.”).

Factors pertinent to a determination of the level of ordinary skill in the art include: (1) educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of workers active in the field. *Best Med. Int’l, Inc. v. Elekta Inc.*, 46 F.4th 1346, 1353 (Fed. Cir. 2022) (citing *Daiichi Sankyo Co.*

v. Apotex, Inc., 501 F.3d 1254, 1256 (Fed. Cir. 2007) (quoting *Env't Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696 (Fed. Cir. 1983)). These factors are not exhaustive but merely are a guide to determining the level of ordinary skill in the art. *Daiichi Sankyo*, 501 F.3d at 1256. In determining a level of ordinary skill, we also may look to the prior art, which may reflect an appropriate skill level. *Okajima*, 261 F.3d at 1355.

Petitioner contends a person having ordinary skill in the art pertaining to the '953 patent “would have had an advanced degree in mechanical engineering and five years of experience in either ski binding design, manufacture, or testing; research concerning ski bindings and related equipment; or the development of standards concerning ski bindings or related equipment.” Pet. 5–6 (citing Ex. 1002 ¶¶ 30–32). Petitioner cites Dr. Hull’s Declaration testimony for evidentiary support. Petitioner, however, omits an important caveat from Dr. Hull.

Dr. Hull testifies that “[t]his level of skill is approximate, and more experience would compensate for less formal education, and vice versa.” Ex. 1002 ¶ 31. For example, Dr. Hull testifies that “an individual having a BS degree in mechanical engineering, but ten years of ski binding design, manufacture, or testing experience would qualify as a POSITA⁸.” *Id.* Petitioner does not explain why it omitted this qualification from its proposed level of skill.

Dr. Hull also testifies that he has been informed that several factors are considered in assessing the level of ordinary skill in the art, including “the (1) types of problems encountered in the prior art; (2) prior-art solutions

⁸“POSITA” is an acronym for the patent law phrase of a “person having ordinary skill in the art [or relevant technology].” *See, e.g.*, 35 U.S.C. § 103.

to those problems; (3) rapidity with which innovations are made; (4) sophistication of the technology; and (5) educational level of active workers in the field.” *Id.* ¶ 30. Dr. Hull fails to state whether these factors were relied upon in forming his opinion, and if so, he also fails to state the underlying facts or data relating to these factors on which the opinion is based. There is no evidence to support why an “advanced degree” in mechanical engineering and five years of relevant experience is required. His opinion is supported only by his statement that he is “familiar with the technology at issue here and the state of the art at the time the application leading to the ’953 patent was filed.” Ex. 1002 ¶ 31. Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight. 37 C.F.R. § 42.65(a). Here, based on Dr. Hull’s extensive experience, we give his testimony some, but little, weight.

Patent Owner states that “for purposes of this Preliminary Response only, VSD does not now dispute the definition of the POSITA as set forth by Dr. Hull.” Prelim. Resp. 7. We note that Patent Owner’s position is based on Dr. Hull’s full testimony, not the excerpt asserted by Petitioner.

Accordingly, for purposes of this Decision, and based on the limited record before us, we determine, based on Dr. Hull’s testimony, the cited prior art, and Patent Owner’s qualified agreement with Dr. Hull’s testimony, that a person of ordinary skill in the relevant technology would have had an advanced degree in mechanical engineering or a related discipline and five years of experience in either ski binding design, manufacture, or testing; research concerning ski bindings and related equipment; or the development of standards concerning ski bindings or related equipment. This level of skill is approximate, and more experience would compensate for less formal education, and vice versa.

D. Claim Construction

As stated in 37 C.F.R. § 42.100(b),

a claim of a patent . . . shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. Any prior claim construction determination concerning a term of the claim in a civil action, or a proceeding before the International Trade Commission, that is timely made of record in the *inter partes* review proceeding will be considered.

37 C.F.R. § 42.100(b). Under this standard, claim terms are generally given their plain and ordinary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc).

1. Claim Construction Principles

“Regarding questions of claim construction, including whether claim language invokes 35 U.S.C. § 112 [¶] 6, determinations based on evidence *intrinsic* to the patent as well as its ultimate interpretations of the patent claims are legal questions.” *Dyfan, LLC v. Target Corp.*, 28 F.4th 1360, 1364–65 (Fed. Cir. 2022) (citing *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1346 (Fed. Cir. 2015) (en banc concerning Part II.C.1 (regarding “Applicability of 35 U.S.C. § 112, para. 6”))⁹.

⁹ Section 4(c) of the Leahy-Smith America Invents Act (AIA), Pub. L. No. 112-29, § 4(c), 125 Stat. 284 (2011), re-designated 35 U.S.C. § 112 ¶ 6, as 35 U.S.C. § 112(f), without any change in the text of the statute. Because the ’953 patent has a filing date before September 16, 2012 (effective date of the statute), we will refer to the pre-AIA version of 35 U.S.C. § 112 when discussing the ’953 patent. Recent caselaw, however, may refer to Section

“[T]here is no magic formula or catechism for conducting claim construction.” *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 801, 809 (Fed. Cir. 2021) (quoting *Phillips*, 415 F.3d at 1324). Fortunately, however, there is substantial judicial guidance.

Claim construction requires determining how a skilled artisan would understand a claim term “in the context of the entire patent, including the specification.” *Grace Instrument Indus., LLC v. Chandler Instruments Co., LLC*, 57 F.4th 1001, 1008 (Fed. Cir. 2023) (quoting *Phillips*, 415 F.3d at 1313). “[C]laims must be read in view of the specification, of which they are a part.” *Id.* The Specification, or more precisely, the written description, is the “single best guide to the meaning of a disputed term.” *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). The Specification is, thus, the primary basis for construing the claims.” *Id.* Although claim terms are interpreted in the context of the entire patent, it is improper to import limitations from the Specification into the claims. *Phillips*, 415 F.3d at 1323. Thus, we are careful not to cross that “fine line” that exists between properly construing a claim in light of the specification and improperly importing into the claim a limitation from the specification. *Comark Commc 'ns., Inc. v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed. Cir. 1998) (“We recognize that there is sometimes a fine line between reading a claim in light of the specification, and reading a limitation into the claim from the specification.”).

While certain terms may be at the center of the claim construction debate, the context of the surrounding words of the claim also must be

“112(f).” Other than this changed designation, Section 112(f) and Section 112 ¶ 6 are identical.

considered in determining the ordinary and customary meaning of those terms. *ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1088 (Fed. Cir. 2003).

We also consider the patent's prosecution history. *Phillips*, 415 F.3d at 1317.

In construing the claims, we may also look to available "extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art." *Phillips*, 415 F.3d at 1314 (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004)).

2. Means-Plus-Function Claims Under 35 U.S.C. § 112 ¶ 6

Section 112 ¶ 6 states:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

Use of the term "means" or "means for" in a claim limitation, creates a rebuttable presumption that Section 112 ¶ 6 applies and, conversely, the absence of the term "means" creates a rebuttable presumption that this statutory mandate does *not* apply. *Williamson v. Citrix Online*, 792 F.3d at 1348. These presumptions can be overcome, however, if the claim limitation "fails to 'recite sufficiently definite structure' or else recites 'function without reciting sufficient structure for performing that function.'" *Id.* (citing *Watts v. XL Sys., Inc.*, 232 F.3d 877, 880 (Fed. Cir. 2000)).

Indeed, as the Federal Circuit has emphasized,

the essential inquiry is not merely the presence or absence of the word "means" but whether the words of the claim are understood

by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure.

Id. at 1348 (citing *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996)); *see also TriMed, Inc. v. Stryker Corp.*, 514 F.3d 1256, 1259–60 (Fed. Cir. 2008) (“Sufficient structure exists when the claim language specifies the exact structure that performs the functions in question without need to resort to other portions of the specification or extrinsic evidence for an adequate understanding of the structure.”).

Regarding application of Section 112 ¶ 6,

[g]eneric terms such as “mechanism,” “element,” “device,” and other nonce words that reflect nothing more than verbal constructs may be used in a claim in a manner that is tantamount to using the word “means” because they “typically do not connote sufficiently definite structure” and therefore may invoke § 112, para. 6.

Williamson v. Citrix Online, 792 F.3d at 1350. Construing a means-plus-function claim term is a two-step process. The court must first identify the claimed function. Then, the court must determine what structure, if any, disclosed in the specification corresponds to the claimed function.

Id. at 1351. Where there are multiple claimed functions, the patentee must disclose adequate corresponding structure to perform all of the claimed functions. *Id.* at 1351–52. If the patentee fails to disclose adequate corresponding structure, the claim is indefinite.¹⁰ *Id.* (citations omitted). Structure disclosed in the specification qualifies as “corresponding

¹⁰ Determining whether a claim is “indefinite” is beyond our jurisdiction in an *inter partes* review. 35 U.S.C. § 311 (b) (“A petitioner in an *inter partes* review may request to cancel as unpatentable 1 or more claims of a patent only on a ground that could be raised under section 102 or 103 and only on the basis of prior art consisting of patents or printed publications.”).

structure” if the intrinsic evidence clearly links or associates that structure to the function recited in the claim. *Williamson v. Citrix Online*, 792 F.3d at 1352. If a person of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim, a means-plus-function clause is indefinite. *Id.*

3. The Claim Term “Release Logic”

A dispositive issue in this IPR proceeding is the meaning of the claim term “release logic.” More precisely, the issue is whether the term “release logic” is a “means-plus-function” term governed by Section 112 ¶ 6.

a) The Parties’ District Court and IPR Claim Constructions

In its Petition, Head Sport takes the position that “[n]o terms need construction to resolve the controversy in this [IPR or PTAB] forum.”

Pet. 6. In addition, however, Petitioner asserts “[b]ecause Patent Owner contends in a parallel proceeding [i.e., the related, stayed District Court proceeding] that a broad construction should apply *for its infringement allegations*, the Board should analyze patentability under the same interpretation.” *Id.*

In the related District Court case, however, Petitioner (i.e., the Defendant, Head Sport) took a different position, arguing that the term “release logic” required construction and should be construed as a “means-plus-function” limitation written in accordance with 35 U.S.C. § 112 ¶ 6. *See, e.g.*, Ex. 1014, 3–5, 11–13); Ex. 2001, 3; Ex. 2003 ¶¶ 74–89. Page 3 from the Parties Joint Claim Construction Statement (Ex. 2001, 3) in the District Court is reproduced below, with highlighting added to call attention to the Parties’ proposed constructions of the term “release logic.”

The parties dispute the constructions of the following terms:

No.	Claim Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
1.	"a first release" ('953 Patent, claims 53, 58)	A first lateral release, i.e., a release of the ski boot from the binding in a transverse direction relative to the longitudinal axis of the ski.	A first lateral toe release, i.e., a release of the ski boot from the toe piece of the binding in a transverse direction relative to the longitudinal axis of the ski. Otherwise, indefinite under § 112.
2.	"a second release" ('953 Patent, claims 53, 58)	A second lateral release, i.e., a second release of the ski boot from the binding in a transverse direction relative to the longitudinal axis of the ski.	A second lateral toe release, i.e., a second release of the ski boot from the toe piece of the binding in a transverse direction relative to the longitudinal axis of the ski. Otherwise, indefinite under § 112.
3.	"release logic" ('953 Patent, claims 53, 58)	An arrangement of components of the binding assembly that causes a specific sequence of actions to actuate or not actuate the first release in response to whether externally applied loads on the ski exceed a predetermined threshold correlated with risk of ACL injury.	Means plus function term subject to § 112, ¶ 6. Function: laterally releasing the toe of the ski boot from the ski binding. Structure: A secondary toe release secured to a trigger platform, pivotable substantially only in one direction, wherein a triggerable latch mechanism is also pivotably secured to a trigger platform and includes a latch that will release a catch on the secondary toe release under a threshold-exceeding force, allowing the secondary toe release to pivot freely to release the toe of the ski boot.

This page 3 excerpt from the Joint Claim Construction (Ex. 2001) in the District Court shows “Defendant’s” (Head Sport or Petitioner in this IPR proceeding) proposed construction of the claim term “release logic” is a “Means plus function term subject to § 112, ¶ 6,” and also summarizes the claimed “function” and “associated structure” for performing this function.

The claim chart excerpt from Exhibit 2001 also shows “Plaintiff’s” (Vermont Safety or Patent Owner in this IPR proceeding) proposed construction for the claim term “release logic,” which is:

An arrangement of components of the binding assembly that causes a specific sequence of actions to actuate or not actuate the first release in response to whether externally applied loads on the ski exceed a predetermined threshold correlated with risk of ACL injury.

Ex. 2001, 3.

To further complicate the issue of claim construction, in this IPR proceeding, Petitioner acknowledges that the “Petition presents how the claims are unpatentable under Patent Owner’s [preliminary] construction for ‘release logic.’” Prelim. CC Reply 2. Patent Owner’s preliminary construction states that the term “release logic” should be construed as:

A specific sequence of actions executed by components of the ski binding assembly, and the components that execute the sequence of actions, in response to externally applied loads on the ski that allow or disallow binding release (via the first release) to occur dependent upon whether predetermined loading conditions are met that would indicate risk of ACL injury.

Id. (citing Ex. 1010, 5). Thus, Petitioner contends that the patentability analysis in the Petition is based on a preliminary claim construction of the term “release logic” by the Patent Owner that has been superseded by a revised construction in the Joint Claim Construction Statement (Ex. 2001) in the District Court. *Id.* at n.1.

Accordingly, we have a record that includes three different constructions for the term “release logic.” Petitioner takes the position “[e]ven under [Patent Owner’s revised] interpretation [in the Joint Claim Construction], Petitioner’s grounds still render the challenged claims unpatentable for the same reasons.” *Id.* Its arguments in the Petition, however, are based on a claim construction for the term “release logic” that neither party believes is correct. Prelim. CC Sur-reply 2 (“VSD does not object to the use of its preliminary construction (i.e., as quoted by Head in Paper 12 at 2), except to note that this particular construction is one that neither party at this point in time considers to be correct.”). Even though Patent Owner states it does not “object” to use of its preliminary, superseded

claim construction, Patent Owner makes clear that it does not agree that this preliminary, superseded construction is correct. *Id.*

Petitioner also asserts:

Patent Owner is attempting to secure an unfair advantage by asserting incompatible positions. Indeed, Patent Owner contends in a parallel district court proceeding that “release logic” is *not* a means-plus-function term and is therefore infringed by Petitioner’s product. Ex-1010, 5. At the same time, it argues that this Board should deny institution because Petitioner was required to construe the term as a means-plus-function claim in the Petition. Prelim. Resp. 10-12. Patent Owner cannot have it both ways—asserting one construction for infringement and another for validity.

Prelim. CC Reply 1 (emphasis added).

In its Preliminary Response, Patent Owner states that “[b]ecause the Petition is deficient on its face . . . , the Board need not make any specific claim construction determinations at this stage and VSD takes no position on construction of specific terms at this time.” Prelim. Resp. 8. One specific deficiency raised by Patent Owner is the issue of whether the claim term “release logic” is a “means-plus-function” limitation written in accordance with 35 U.S.C. § 112 ¶ 6. Prelim. Resp. 10–12, 19–22.

Patent Owner also asserts that:

VSD [Vermont Safety or Patent Owner] did not argue that “release logic” should be construed as a means-plus-function term, but rather that Head was obligated to inform the Board in its Petition that this is a disputed issue about this term. VSD’s position on claim construction is the same here as it is in the district court—“release logic” is *not* a means-plus-function term and should be construed as “[a]n arrangement of components of the binding assembly that causes a specific sequence of actions to actuate or not actuate the first release in response to whether externally applied loads on the ski exceed a predetermined

threshold correlated with risk of ACL injury”, as set forth in the Joint Claim Construction Statement (“JCCS”). Ex. 2001 at 3.

Prelim. CC Sur-reply 2. We disagree.

If a claim term is a “means-plus-function” limitation, our rules require that a petition filed to initiate an *inter partes* review “must identify:”

How the challenged claim is to be construed. Where the claim to be construed contains a means-plus-function or step-plus-function limitation as permitted under 35 U.S.C. 112(f), the construction of the claim must identify the specific portions of the specification that describe the structure, material, or acts corresponding to each claimed function.

37 C.F.R. § 42.104(b)(3). This claim construction rule applies solely to the “petition.” *Id.* Failure to comply with this mandatory requirement (“must identify”), will result in a petition being denied. *Id.*, *MillerKnoll*, IPR2023-01428, Paper 8, 11–14, 18–21.

Our Trial Practice Guide states the following about a claim term that “*may*” contain a means-plus-function term:

Where claim language *may* be construed according to 35 U.S.C. § 112(f), a petitioner *must* provide a construction that includes both the claimed function and the specific portions of the specification that describe the structure, material, or acts corresponding to each claimed function. 37 C.F.R. § 42.104(b)(3). *A party may choose to elaborate why § 112(f) should or should not apply to the limitation at issue. See Williamson v. Citrix Online, LLC, 792 F.3d 1339 (Fed. Cir. 2015). A petitioner who chooses not to address construction under § 112(f) risks failing to satisfy the requirement of 37 C.F.R. § 42.104(b)(3).*

TPG 45 (emphases added).

Here, in the Petition, Petitioner made its choices. It chose to *not* assert or elaborate on the possibility that its proffered District Court construction of the term “release logic” (“Means plus function term subject to § 112, ¶ 6”

(Ex. 2001, 3)) may be the correct construction, and thus adopted by the Board. Petitioner did not propose a possible means-plus-function construction as an alternative. Our Rules do not preclude Petitioner from submitting more than one construction, including one that it believes is incorrect, such as a patent owner's expected construction. *General Electric Co. v. Vestas Wind Systems A/S*, IPR2018-00928, Paper 9 at 15–16 (PTAB Nov. 5, 2018) (“In other words, the rule [37 C.F.R. § 42.104(b)(3)] does not prohibit a petitioner from submitting more than one construction, including one that it believes is incorrect, such as a patent owner's expected construction.”).

Petitioner asserts it “does not run afoul of the 37 C.F.R. § 42.104(b)(3) merely by asserting in a petition a claim construction that differs from a construction [P]etitioner asserts in a parallel proceeding in a district court.” Prelim. CC Reply 4 (citations omitted). We agree. *See, e.g., Western Digital Corporation v. Spex Technologies, Inc.*, IPR2018-00084, Paper 14, 11 (PTAB Apr. 25, 2018). In *Western Digital* the Board determined

37 C.F.R. § 104(b)(3) does not require Petitioner to express its subjective agreement regarding correctness of its proffered claim constructions or to take ownership of those constructions. Petitioner complies with our rules by identifying claim constructions it proposes as the basis for requesting review of the challenged claims. Petitioner's statement that its Petition is *based on* the claim constructions urged by Patent Owner” in related District Court litigation suffices to identify claim constructions Petitioner is adopting for purposes of the requested review in compliance with § 104(b)(3).

Western Digital, Paper 14, 11.

Moreover, Petitioner made of record each Party's preliminary claim constructions in the District Court. *Id.* at 5 (citing Exs. 1010, 1014). We do

not question Petitioner’s candor in disclosing information to us. The issue here is that we are not limited to the claim constructions advanced by the parties. We base our claim construction on the totality of the evidence before us. The evidence before us includes: the Specification of the ’953 patent; excerpts of the prosecution history of the ’953 patent; the parties’ preliminary and Joint Claim Construction statements (Exs. 1010, 1014, 2004), Dr. Hull’s Declaration testimony on claim construction submitted by Head Sport (Ex. 2003 ¶¶ 74–89), and Dr. Hull’s Declaration testimony in this IPR proceeding.

We also note that the District Court has not yet construed the claims, and stated that the “majority of the substantive claims construction has yet to be done in this case,” including expert claim construction depositions, claim construction briefing, a claim construction hearing, and issuance of a claim construction Order from the Court. Ex. 2004, 9.

Petitioner argued in the parallel District Court proceeding, in support of a stay of the District Court proceeding, to allow this Board to first determine whether to institute an IPR proceeding “under any [claim] construction the PTAB [chooses], and that’s their job. Their job is to construe their claims.” Ex. 2002, 8:16–18. We agree again. Our goal is to construe the claims correctly as a matter of law based on the arguments and evidence before us.

We are not limited to the parties’ litigation or claim construction strategies in different fora. “[T]he Board may adopt a claim construction of a disputed term that neither party proposes without running afoul of the APA [Administrative Procedure Act].” *Google LLC v. EcoFactor, Inc.*, 92 F.4th 1049, 1057 (Fed. Cir. 2024) (citing *Qualcomm Inc. v. Intel Corp.*, 6 F.4th

1256, 1262–63 (Fed. Cir. 2021) (collecting cases). The additional claim construction briefing allowed for the parties to provide evidence and arguments concerning whether the term “release logic” is or is not a means-plus-function term subject to Section 112 ¶ 6. The Board is permitted to adopt a claim construction when both parties “dispute[] the meaning and scope of [a limitation] during the IPR proceeding,” even if no party expressly requests construction. As long as the parties are “afforded both notice and opportunity to address” the proper interpretation of such a disputed claim term, the Board’s construction does not violate the APA. *Kirsch Rsch. & Dev., LLC v. GAF Materials LLC*, No. 2022-2063, 2024 WL 1927896, at *3 (Fed. Cir. May 2, 2024) (citing *Google v. EcoFactor*).

“It is axiomatic that claims are construed the same way for both invalidity and infringement.” *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1330 (Fed. Cir. 2003) (citing *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 842 F.2d 1275, 1279 (Fed. Cir. 1988); see also *Lazare Kaplan Int’l, Inc. v. Photoscribe Techs., Inc.*, 714 F.3d 1289, 1296 (Fed. Cir. 2013) (referring to “the familiar axiom that claims are construed the same way for both invalidity and infringement.”) (citing *Amgen v. Hoechst*). The Federal Circuit has “repeatedly rejected efforts to twist claims, ‘like a nose of wax,’¹¹” in “one way to avoid [invalidity] and another to find infringement.”

¹¹ Justice Bradley’s entire “nose of wax” quote is:

Some persons seem to suppose that a claim in a patent is like a nose of wax which may be turned and twisted in any direction, by merely referring to the specification, so as to make it include something more than, or something different from, what its words express. The context may, undoubtedly, be resorted to, and often is resorted to, for the purpose of better understanding the meaning of the claim; but not for the purpose of changing it,

Data Engine Techs. LLC v. Google LLC, 10 F.4th 1375, 1381 (Fed. Cir. 2021) (citing *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1351 (Fed. Cir. 2001)).

Claims must be construed “only to the extent necessary to resolve the controversy.” *AstraZeneca AB v. Mylan Pharms. Inc.*, 19 F.4th 1325, 1345 (Fed. Cir. 2021) (quoting *Vivid Techs., Inc. v. American Science & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)); *see also Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (citations omitted)).

As we discussed above, both parties seem to be asserting claim construction positions in this IPR proceeding different from their claim construction positions asserted in the related District Court case.

In the District Court, Petitioner Head Sport asserts “release logic” is a “means-plus-function” term. *See, e.g.*, Ex. 1014, 3–5, 11–13); Ex. 2001, 3; Ex. 2003 ¶¶ 74–89. In this IPR proceeding, Petitioner asserts “release logic” is *not* a “means-plus-function” term.

In the District Court, Patent Owner Vermont Safety asserts the claim term “release logic” is *not* a “means-plus-function” term. In this IPR proceeding, however, Patent Owner asserts the Petition should be denied for

and making it different from what it is. The claim is a statutory requirement, prescribed for the very purpose of making the patentee define precisely what his invention is; and it is unjust to the public, as well as an evasion of the law, to construe it in a manner different from the plain import of its terms. This has been so often expressed in the opinions of this court that it is unnecessary to pursue the subject further.

White v. Dunbar, 119 U.S. 47, 51–52 (1886).

failure of Petitioner to construe the “means-plus-function” term “release logic,” as required by our Rules. *See, e.g.*, Prelim Resp. 10–12.

To determine the correct construction of the term “release logic,” we turn to the evidence. First, we review the intrinsic evidence. We start with the claims.

b) Claims

As stated above, the term “release logic” is used fifty-one times in the ’953 patent, and is included in all the challenged claims. *See, e.g., id.* at 21:6, 17, 22, 26 (for independent claim 30). The relevant clauses from representative claim 30 using this term are repeated below:

- (1) said ski binding assembly including **release logic** that causes the ski binding assembly to release the ski boot at said first release in response to a release condition; (Ex. 1001, 21:5–8) (emphasis added)

We have not been directed to any persuasive evidence or claim language that the term “release logic” in this clause recites, or would be understood by a person of ordinary skill in this technology to recite structure sufficient to avoid invoking § 112, ¶ 6. *Williamson v. Citrix Online*, 792 F.3d at 1350. We do not know from this clause (of claim 30) what a “release logic” is. From the clause alone, we do not know whether “release logic” would be understood by a skilled artisan to refer to a sufficiently definite structure. We do know, however, that its *function* is to “cause[] the ski binding assembly to release the ski boot” in response to a release condition.

- (2) wherein said **release logic** is configured to: determine whether or not the release condition is occurring as a function of both of the first loading and the second loading; and cause said ski binding assembly to provide said first release if the

release logic determines that the release condition is occurring;
(Ex. 1001, 21:17–20) (emphases added)

We have not been directed to any persuasive evidence or claim language that the term “release logic” in this clause recites, or would be understood by a person of ordinary skill in this technology to recite a sufficiently definite structure. We do not know from this clause what a “release logic” is. We do not know its structure. We do know, however, that its additional functions are to “determine whether or not the release condition is occurring,” and, if so, to “cause said ski binding assembly to provide said first release”

(3) and said **release logic** is configured to determine whether or not the release condition is occurring as a function of the force-couple (Ex. 1001, 21:26–28) (emphasis added)

We have not been directed to any persuasive evidence or claim language that the term “release logic” in this clause defines, or would be understood by a person of ordinary skill in this technology to define, any specific structure. We do not know from this clause what a “release logic” is. From the clause alone, we do not know whether it would be understood by a skilled artisan to refer to a sufficiently definite structure. We do know, however, that it performs an additional function, namely to “determine whether or not the release condition is occurring as a function of the force-couple.”

(4) Other Claims

The remaining challenged claims provide similar functional clauses to those discussed for claim 30. We note that *unchallenged* claim 51 states the “release logic comprises a trigger and a secondary toe release responsive to said trigger.” Ex. 1001, 23:45–46. The additional structure and function

recited in claim 51 does not appear to assist us in construing the “release logic” of claim 30 and the other challenged claims.

(5) Conclusion Based on the Claims

Construing a means-plus-function claim term is a two-step process. In this first step of construing the claims, we have first identified the claimed functions of the term “release logic.” Next, we will determine what structure, if any, is disclosed in the Specification that corresponds to the claimed functions. *Williamson v. Citrix Online*, 792 F.3d at 1350–51.

c) The Specification

A structure disclosed in the specification qualifies as “corresponding structure” if the intrinsic evidence clearly links or associates that structure to the function recited in the claim. *Id.* at 1352.

The Specification states that one embodiment of the “release-logic mechanism” is shown in Figures 9A and 9B in an “unreleased state,” in Figures 10A and 10B in a “released state,” and in Figure 11. Ex. 1001, 3:14–32. Figure 11 illustrates “exemplary components that may be used to make the third-quadrant release-logic mechanism work.” *Id.* at 3:27–32.

Figures 12–16 illustrate a “second embodiment” of the “release-structure mechanism.” *Id.* at 33–67.

Figures 22–24 illustrate an embodiment that uses an “electronic” version of the “release-logic binding system.” *Id.* at 4:1–9.

Thus, from the description of the drawings, it appears that the claimed “release logic” may correspond to structure in any one of at least three different embodiments. *See also id.* at 9:5–8 (“FIGS. 9A–24 illustrate examples of binding system configurations that can be used to achieve the *release logic* that provides an attenuated release in response to substantially only loads applied in the third quadrant.”) (emphasis added). Thus, our

review of the Specification fails to support a conclusion that “release logic” alone identifies a particular structure.

Rather, the Specification indicates a conclusion that the “release threshold logic may be implemented in a number of ways using various mechanisms and/or electronics.” *Id.* at 4:65–67. Additionally, the Specification states that “several ski binding systems that include unique release-threshold logic” are described. Ex. 1001, 5:6–8.

Thus, the Specification uses “release logic” to refer to a number of different types of structures that perform functions akin to those discussed above. Like the word “module,” which was analyzed in *Williamson*, the word “logic” could be read as simply a generic description for electronics or hardware that performs a recited function. *Williamson v. Citrix Online*, 792 F.3d at 1350. As further stated in *Williamson v. Citrix Online*, “[g]eneric terms such as ‘mechanism,’ ‘element,’ ‘device,’ and other nonce words that reflect nothing more than verbal constructs may be used in a claim in a manner that is tantamount to using the word ‘means’ because they ‘typically do not connote sufficiently definite structure’ and therefore may invoke § 112, para. 6. *Id.* (citing *Mass. Inst. of Tech. & Elecs. for Imaging, Inc. v. Abacus Software*, 462 F.3d 1344, 1354 (Fed. Cir. 2006)).

As discussed above, the Specification uses slightly different terminology in referring to different embodiments of the claimed “release logic,” such as “release-logic mechanism,” “release-structure mechanism,” “release-logic binding system,” and “release-threshold logic.” Each of these labels refers to a collection of structures that perform functions recited in the claims after “release logic.” Each of these labels also uses a word that could be read as a nonce word, namely “mechanism,” “system,” and “logic.” Additionally, “release” relates to the later recited functions performed by the

“logic,” namely: “causes . . . assembly to release,” “determine whether or not to release,” “cause . . . assembly to provide said first release,” and “determine whether or not the release condition is occurring.”

In the context of Figures 9–11, the Specification states “FIG.9B shows two primary components of release-logic mechanism 912, i.e., a trigger platform 932 and a secondary toe release 936.” Ex. 1001, 9:34–36. This disclosure clearly links or associates these structures, trigger platform 932 and a secondary toe release 936, to the functions of the “release logic” mechanism recited in the claim.

With respect to trigger platform 932, the Specification further describes that trigger platform 932 is “constrainably pivotable” in the counter clockwise direction. In this configuration, a non-zero threshold shear force, which translates into a “trigger trip torque,” is needed in the third quadrant before the trigger platform begins to move appreciably and provide its triggering effect. Ex. 1001, 9:47–53. One example of a trigger trip torque mechanism for providing this trigger threshold is adjustable trip torque mechanism 1100, described in connection with Figure 11. *Id.* at 9:53–56. This trip torque is a function of the location of pivot point 940 relative to tibial axis 942, as well as the setting of the trip torque mechanism. *Id.* at 9:57–59.

With respect to secondary toe release 936, the Specification further describes that secondary toe release 936 is secured to trigger platform 932 so as to be “constrainably pivotable” about pivot point 944 located between the toe end of ski-boot sole 924 and pivot point 940 of trigger platform 932 and to be pivotable substantially only in a clockwise direction relative to the trigger platform from the position shown in Figure 9B. *Id.* at 9:65–10:3.

Third quadrant release-logic mechanism 912 also includes an attenuated release threshold mechanism, such as adjustable release threshold mechanism 1104, shown and further described in the description of Figure 11, that provides secondary toe release 936 with its “attenuated release torque.” *Id.* at 10:3–10.

As further evidence that the term “release logic” does not refer to or define specific structure, the Specification makes clear that:

Those skilled in the art will readily appreciate that the embodiment of FIGS. 9A-11 is merely one example of release logic that provides an attenuated release envelope for shear forces applied in the third quadrant. Following are descriptions of three additional examples to illustrate this point. As will be seen in reviewing these additional examples, there are a number of ways to implement the differing aspects of the release logic, such as the implementation of the trigger and the setting of the trigger trip torque, and the implementation of the secondary toe release and the setting of attenuated-release threshold, among other things.

Ex. 1001, 12:23–33. The Specification then proceeds to describe the other embodiments.

Thus, the embodiment shown and described in the context of Figures 9–16 qualifies as “corresponding structure” because the intrinsic evidence clearly links or associates that structure to the functions that the claims recite as being performed by the “release-logic.” *Williamson v. Citrix Online*, 792 F.3d at 1352. Accordingly, as required by 35 U.S.C. § 112 ¶ 6, the term “release logic” in the challenged claims shall be construed to cover this corresponding structure, material, or acts described in the specification and equivalents thereof.

While third-quadrant release-logic mechanisms 912, 1208 of Figures 9A–11 and Figures 12–16, respectively, are similar in the context of the

ability to utilize conventional heel and toe pieces, the second of the additional examples, illustrated in Figures 17–21, uses a “unique toe assembly 1700” that provides the secondary toe release and the adjustable attenuated release threshold without the need for the pivotable secondary release plate. *Id.* at 14:64–15:4.

Thus, the embodiment shown and described in the context of Figures 17–21 also qualifies as “corresponding structure” because the intrinsic evidence clearly links or associates that structure to the “release-logic” function recited in the claims. *Williamson v. Citrix Online*, 792 F.3d at 1352. Accordingly, as required by 35 U.S.C. § 112 ¶ 6, the term “release logic” in the challenged claims shall be construed to cover this corresponding structure, material, or acts described in the specification and equivalents thereof.

Whereas the embodiments of Figures 9A–21 are mechanical in nature, the third-quadrant “release logic” can be implemented electronically using either a digital controller or an analog controller, or a combination of both. Ex. 1001, 16:37–41. Figures 22–24, and the associated text in the Specification, illustrate “one example of a ski system 2200 that includes an electronic third-quadrant release-logic binding system 2204.” *Id.* at 16:41–43. Electronic binding system 2204 also includes at least two sensors “for sensing information regarding the lateral (shear) forces being transmitted between base 2208 and ski 2220 at two distinct locations along the longitudinal axis of the ski.” *Id.* at 16:61–64. With this arrangement, the sensors, shown as load cells 2400A-D, are able to sense the lateral forces between base 2208 and ski 2220 at two distinct locations. *Id.* at 17:3–5. In this example, each of heel and toe pieces 2212, 2216 is responsive to a trigger signal to cause a release of boot sole 2218. *Id.* at 17:5–7.

Electronic binding system 2204 includes controller 2324 for implementing the “release logic.” *Id.* at 17:26–27. The attenuated release logic of controller 2324 is designed to trigger actuators 2316, 2320 when the value of calculated torque T exceeds the value of the predetermined release torque. *Id.* at 18:7–10.

The embodiment shown and described in the context of Figures 22–24, disclosing an electronic third-quadrant “release-logic” binding system 2204 also qualifies as “corresponding structure” because the intrinsic evidence clearly links or associates that structure to the “release-logic” function recited in the claims. *Williamson v. Citrix Online*, 792 F.3d at 1352. Accordingly, as required by 35 U.S.C. § 112 ¶ 6, the term “release logic” in the challenged claims shall be construed to cover this corresponding structure, material, or acts described in the specification and equivalents thereof.

d) The Prosecution History

We have not been directed to any persuasive evidence in the Patent and Trademark Office proceedings leading to issuance of the ’953 patent, referred to as the “prosecution history” in the terminology of patent law, that informs our decision on claim construction of the term “release logic.”

e) Extrinsic Evidence

Claim construction requires determining how a skilled artisan would understand a claim term “in the context of the entire patent, including the specification.” *Phillips*, 415 F.3d at 1313. The only extrinsic evidence on this issue in the record before us is the Declaration testimony of Dr. Hull.

In the District Court, Dr. Hull testified that:

Based on my review of the claims, specification, and prosecution history of the ’953 patent, it is my opinion that

“release logic” *does not recite sufficiently definite structure as understood by a POSITA*. Instead, it is recited in functional terms, merely conveying that the binding contains something to perform a logical operation to determine whether or not to release the ski boot from the ski.

Ex. 2001 ¶ 77 (emphasis added). Dr. Hull also testified in the District Court that “[i]n my opinion, ‘logic’ is one such nonce word as it does nothing to impart structure to the term ‘release logic. It is understood in the art that ‘logic’ does not refer to any specific structure and is instead a generic term to describe a system of elements.” Ex. 2001 ¶ 78. Additionally, Dr. Hull testified that the phrase “‘release logic that causes’” is understood to be another way of saying “means for.” *Id.* ¶82. Dr. Hull further testified that

In my opinion, the corresponding structure in the specification for performing the claimed function is a secondary toe release secured to a trigger platform, pivotable substantially only in one direction, wherein a triggerable latch mechanism is also pivotably secured to a trigger platform and includes a latch that will release a catch on the secondary toe release under a threshold-exceeding force, allowing the secondary toe release to pivot freely to release the toe of the ski boot.

Id. ¶84 (citing Ex. 1001, 9:9–45, 9:65–10:46, 12:34–13:12, 14:14–20).

Dr. Hull also testified that

in my opinion, one skilled in the art would have understood the minimum necessary structure to perform the recited function is a secondary toe release secured to a trigger platform, pivotable substantially only in one direction, wherein a triggerable latch mechanism is also pivotably secured to a trigger platform and includes a latch that will release a catch on the secondary toe release under a threshold-exceeding force, allowing the secondary toe release to pivot freely to release the toe of the ski boot, and equivalents thereof. This is the only applicable structure described in the patent specification that is linked to the function recited in the claim.

Id. ¶89.

Based on Dr. Hull’s testimony in the District Court, which we find to be persuasive, we conclude that an ordinarily skilled artisan would not have understood “release logic” to refer to, or to have a definite meaning as the name for structure. Accordingly, we find that any presumption that the claims at issue do not invoke § 112, ¶ 6 is overcome, and we conclude that “release logic” introduces claim language that is properly interpreted under § 112, ¶ 6.

Dr. Hull’s testimony in the District Court appears to address only the embodiment disclosed in Figures 9–11 of the ’953 patent. He did not opine on the other embodiments disclosed in the patent, such as the embodiment in Figures 22–24 disclosing electronic third-quadrant release-logic binding system 2204. However, his testimony that the words of the claim would not be understood by an ordinarily skilled artisan to have definite meaning as the name for structure remains persuasive.

Dr. Hull also submitted Declaration testimony in this IPR proceeding. *See* Ex. 1002. In his IPR Declaration, he does not address the construction of the term “release logic.” He does not comment on whether it is a “nonce” word, or whether it should be construed to cover corresponding structure disclosed in the Specification and equivalents thereof, as he testified in the District Court. Instead, he testifies that “I understand that I should analyze the patentability of the ’953 patent under the same interpretation that Patent Owner contends applies in the parallel district court proceeding.” Ex. 1002 ¶ 53. He does not otherwise comment on his substantively different testimony before the District Court. Thus, Dr. Hull offers no testimony in Exhibit 1002 relating to claim interpretation. Accordingly, his IPR testimony does not undermine our reliance on the testimony he offered in the

District Court on the critical question of whether “release logic” refers to claim language that must be interpreted under § 112, ¶ 6.

f) Conclusion Regarding Construction of “Release Logic”

We recognize that “[t]he very nature of words would make a clear and unambiguous claim a rare occurrence.” *Autogiro Co. of Am. v. United States*, 384 F.2d 391, 396 (Ct. Cl. 1967). The Federal Circuit, however, has provided a beacon, which we have followed, to guide us in determining the proper construction when we encounter ambiguities or differing interpretations from the parties:

Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.

Renishaw PLC v. Marposs Societa’ per Azioni, 158 F.3d 1243, 1250 (Fed. Cir. 1998) (citations omitted).

Based on the evidence and the analysis above, we determine that the term “release logic” refers to claim language that must be interpreted as a means-plus function term governed by 35 U.S.C. § 112 ¶ 6. Thus, we determine this claim term “shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof” that perform the functions recited in the claims. We have identified in our analysis above, based on the record before us, the various embodiments of assemblies that perform the claimed functions.

We now turn to the merits of Petitioner’s asserted Grounds of unpatentability.

E. Analysis of Claims

We focus our analysis on the term “release logic,” which appears in all the challenged claims. As we explained above, we determined that the term “release logic” along with its recited functions should be construed under Section 112 ¶ 6 to cover “corresponding structure, material, or acts described in the specification and equivalents thereof,” that perform the recited functions. Petitioner did not identify how the asserted prior art described those structures or their equivalents. Instead, as discussed above, Petitioner relied on Patent Owner’s preliminary construction in the District Court, which Patent Owner identified in wholly functional terms as a “specific sequence of actions.” Pet. 6 (citing Ex. 1010; Ex. 1002 ¶¶ 52–53); Prelim. CC Reply 1 (citing Ex. 1010, 5). Thus, Petitioner’s analysis fails to address how the prior art meets the limitations set forth in the claims as we have interpreted those claims. Accordingly, we find that Petitioner has failed to meet its burden to establish a reasonable likelihood that it would prevail with respect to at least one of the claims challenged in the petition. Thus we deny institution of an *inter partes* review. See Samsung Elecs. Am., Inc. v. Cobblestone Wireless, LLC, IPR2024-00319, Paper 16, slip op. 16–23 (PTAB Jun. 24, 2024) (holding that because Petitioner’s obviousness showing was based on an incorrect claim construction, Petitioner did not demonstrate a reasonable likelihood that a claim limitation was disclosed by, or would have been obvious over, the cited reference).

V. CONCLUSION

Our determination to deny institution of an *inter partes* review does not rely on discretionary denial or on Rule 42.104(b)(3), but rather it is based on Petitioner’s failure to demonstrate a reasonable likelihood that the challenged claims would have been obvious based on the asserted references

using the claim construction we determined should apply for the term “release logic.”

Here, Petitioner does not rely on the ordinary meaning of a claim term, does not offer alternative constructions of a claim term, and does not rely on a construction agreed upon by the parties in the proceeding at issue. None of those situations is present in this case.

VI. ORDER

Upon consideration of the record before us, it is:

ORDERED that the Petition is denied as to all challenged claims, and no trial is instituted.

IPR2024-01099
Patent 7,523,953 B2

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