

UNITED STATES DISTRICT COURT
DISTRICT OF VERMONT

VERMONT SAFETY
DEVELOPMENTS
LLC,

Plaintiff,

V.

HEAD SPORT GmbH,

Defendant.

Case No. 2:23-cv-00089

**DECLARATION OF MAURY HULL, PH.D., IN SUPPORT OF HEAD
SPORT GMBH'S PROPOSED CONSTRUCTION OF DISPUTED CLAIM
TERMS OF U.S. PATENT NO. 7,523,953**

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LIST OF EXHIBITS

<u>Exhibit</u>	<u>Description</u>
Ex-1001	U.S. Patent No. 7,523,953 to Ettlinger et al. (“the ’953 patent”)
Ex-1002	RESERVED
Ex-1003	RESERVED
Ex-1004	RESERVED
Ex-1005	RESERVED
Ex-1006	RESERVED
Ex-1007	RESERVED
Ex-1008	RESERVED
Ex-1009	Prosecution History of the ’953 patent
Ex-1010	VSD’s Proposed Claim Constructions served on April 23, 2024
Ex-1011	ASTM Int’l, Standard F939-05, <i>Standard Practice for Selection of Release Torque Values for Alpine Ski Bindings</i> 1 (2005)
Ex-1012	RESERVED
Ex-1013	Complaint in <i>Vermont Safety Developments LLC v. Head Sport GmbH</i> , No. 2:23-cv-00089 (D. Vt. May 11, 2023)
Ex-1014	Head’s Proposed Claim Constructions served on April 23, 2024
Ex-1015	CV of Maury Hull, Ph.D.
Ex-1016	RESERVED
Ex-1017	U.S. Patent No. 6,007,086 to Hopkins
Ex-1018	ASTM Int’l, Standard F504-05, <i>Standard Test Method for Measuring the Quasi-Static Release Moments of Alpine Ski Bindings</i> 1 (2005)

<u>Exhibit</u>	<u>Description</u>
Ex-1019	VSD's Updated Preliminary Infringement Contentions, served on March 8, 2024
Ex-1020	Head's Initial Non-Infringement and Invalidity Contentions, served on February 2, 2024
Ex-1021	Email Communication from David Dodge to Robert Stanzl, Copying Herwig Schretter, on November 24, 2017

1. My name is Maury Hull, Ph.D. I have been retained by counsel for Head Sport GmbH (“Head”) as an independent expert in this proceeding before the United States District Court for the District of Vermont. I understand that this case involves U.S. Patent No. 7,523,953 (“the ’953 patent”). Ex-1001. I have been asked to provide my opinions as to the construction of certain claim terms of the ’953 patent.

2. This declaration sets forth my opinions, which I have formed in this proceeding based on my study of the evidence; my understanding as an expert in this industry; and my education, training, research, knowledge, and personal and professional experience.

3. I am being compensated for my time at a rate of \$350 per hour. This compensation is in no way contingent upon the nature of my findings, the presentation of my findings in testimony, or the outcome of this proceeding.

I. QUALIFICATIONS AND BACKGROUND

4. I believe that I am well qualified to serve as a technical expert in this matter based upon my educational and work experience.

5. I understand that my curriculum vitae (“CV”) is being filed in this proceeding as Ex-1015.

6. I am currently a Distinguished Professor Emeritus at the University of California Davis where I direct the Orthopaedic Biomechanics Laboratory in

the Department of Orthopaedic Surgery at the UC Davis Medical Center in Sacramento. I hold appointments in the Department of Biomedical Engineering, the Department of Mechanical Engineering, and the Department of Orthopaedic Surgery.

7. I received a BS degree in mechanical engineering from Carnegie-Mellon University in 1969 and MS and PhD degrees also in mechanical engineering from the University of California Berkeley in 1970 and 1975. My PhD dissertation is titled "Skiing Injuries: Field Loading and Analysis," and involves design of an instrumentation system to measure the six load components at both the toe piece and heel piece of releasable bindings for Alpine skiing and the use of this system to measure boot-binding reaction loads in different types of Alpine skiing turns.

8. I became a faculty member in the Department of Mechanical Engineering at the University of California Davis in 1976. From 1993 until 2000 I served as Chair of the Biomedical Engineering Graduate Program and played a leadership role in creating a new Department of Biomedical Engineering launched in 2001. This department now has 35 FTE, 400 undergraduate students, 100 graduate students, and annual research expenditures in excess of \$17 million.

9. I was active in the Bioengineering Division of the American Society of Mechanical Engineers in various leadership positions for 15 years including

Chair of the Division in 2003. As Division Chair, I led the formation of the annual Summer Bioengineering Conference (now the SB³C conference) typically attended by 800 participants including a large cohort of students.

10. My research activities encompass orthopaedic biomechanics with emphasis on the human knee, musculoskeletal system modeling and simulation of movement, and sports biomechanics and equipment design. My research in sports biomechanics and equipment design has led to design innovations in releasable bindings for Alpine skiing and off-road cycling which improved the safety of these sports. In addition, I hold three patents on releasable bindings for Alpine skiing.

11. I was also a pioneer in development of whole-body musculoskeletal models to simulate human movement. These models are now used by hundreds of researchers internationally in applications including analysis of walking dynamics, studies of sports performance, simulations of surgical procedures, analysis of joint loads, design of medical devices, and animation of human and animal movement. In orthopaedic biomechanics, I developed new surgical procedures to more effectively treat knee injury and disease. Surgical procedures include anterior cruciate ligament (ACL) reconstruction, meniscal transplantation, and total knee replacement. These advances in surgical techniques have led to improved patient outcomes which are well-documented in the literature. To describe the results of

my research, I have published more than 285 papers in scientific journals with my 90 graduate advisees and orthopaedic residents being lead authors on most papers.

12. In recognition of my research achievements, I have received a number of major awards including the Giovanni Borelli Award from the American Society of Biomechanics in 1989 (highest honor of the society); Life Fellow of ASME in 1993; the H. R. Lissner Medal from the Bioengineering Division of the American Society of Mechanical Engineers (ASME) in 2007 (highest honor of the division); a special award from Bicycling Magazine for Excellence in Applied Science Research in 2008; promotion to Distinguished Professor in 2012 (1st person in the 50-year history of his department to receive this promotion which is the highest level of advancement in the University of California system); Paolo Aglietti Award from the International Society of Arthroscopy, Knee Surgery, and Orthopaedic Sports Medicine recognizing outstanding research contributing to the understanding of knee arthroplasty in 2019; honorary membership in the Personalized Arthroplasty Society in 2020; and the Robert M. Nerem Education and Mentorship Medal from the Bioengineering Division of ASME in 2021.

13. I serve on the editorial board of the *Journal of Biomechanics* and have served multiple terms as Associate Editor of the *Journal of Biomechanical*

Engineering. I have been honored as an educator when I received the UC Davis Engineering Alumni Distinguished Teaching Award in 2002.

14. Throughout my career, I have been a member of several professional associations. Some of these associations include, but are not limited to, The American Society of Mechanical Engineers (ASME), Biomedical Engineering Society (BMES), Orthopedic Research Society (ORS), International ACL Study Group, American Society of Biomechanics (ISB), American Society for Testing and Materials (ASTM), and the International Society for Skiing Safety (ISSS).

15. While an active member of the ASTM, I regularly attended meetings and have co-authored papers for the American Society for Testing and Materials (“ASTM”) STP series on *Ski Trauma and Safety* since 1979. Many of my papers reported on novel designs of Alpine ski bindings including both mechanical and electromechanical (i.e., electronic) bindings.

16. In addition to my membership in these professional associations, I have personally been involved in alpine skiing since 1966 and skied for approximately the next 35 years.

17. Additional details on my qualifications are provided in my CV. Ex-1015.

II. SUMMARY OF OPINIONS

18. I have been asked to provide my opinion on a number of issues. First, I have been asked to consider and offer my opinion of the understanding that a person of ordinary skill would have had for certain claim terms appearing in claims 53-56 and 58-60 of the '953 patent. I provide my opinion and the bases below for how a person of ordinary skill in the art would have understood these terms.

19. Second, I have been asked to consider and offer my opinion of whether certain terms appearing claims 53-56 and 58-60 of the '953 patent inform, with reasonable certainty, those of ordinary skill in the art about the scope of the claimed invention. I provide my opinion and the bases below that the terms fail to inform, with reasonable certainty, those of ordinary skill in the art about the scope of the claimed invention.

20. Third, I have been asked to consider and offer my opinion on whether certain terms in claims 53-56 and 58-60 of the '953 patent would be understood by one of skill in the art to recite sufficient structure. I have also been asked to consider and offer my opinion on whether the specification of the '953 patent discloses sufficient structure corresponding to the claim functions. As set forth below, in my opinion, the claim term "release logic," for example, considered in light of the specification does not disclose sufficient structure in and of itself to

perform the claimed function. The specification explicitly defines the structure of this “release logic” as the pivotable top plate that releases the toe of a ski boot.

III. MATERIALS CONSIDERED

21. In forming the opinions provided in this Declaration, I have considered and relied on my experience and knowledge in the relevant art, and the viewpoint of a person of ordinary skill in the art (“POSITA”). I have considered the following documents, my experience and knowledge, and the viewpoint of a POSITA as of August 8, 2006. These documents include: the ’953 patent (Ex-1001), the prosecution history of the ’953 patent (Ex-1009), the parties’ disclosures of claim construction proposals (Ex-1010 and Ex-1014), VSD’s preliminary infringement contentions served on March 8, 2024 (Ex-1019), and Head’s preliminary non-infringement and invalidity contentions served on February 2, 2024 (Ex-1020), and an email dated November 24, 2017, from Mr. Dodge to Mr. Stanzl regarding VSD’s patent (Ex-1021).

22. Additionally, I qualified as a POSITA at the time of the purported invention of the ’953 patent. Accordingly, in addition to viewing these issues through the lens of a hypothetical POSITA, I have also been able to apply my own knowledge and experience as a POSITA as of the time of the purported invention, based on my memory and recollection of the knowledge and experience I had at the time as a POSITA.

23. I may rely upon these materials, my knowledge and experience, and/or additional materials to rebut arguments raised by VSD. Further, I may also consider documents and information in forming any necessary opinions, including documents that may not yet have been provided to me.

IV. LEGAL STANDARD

24. In forming my opinions and considering the subject matter of the '953 patent and its claims in light of the prior art, I am relying on certain legal principles that counsel in this case has explained to me. My understanding of these concepts is summarized below.

25. I understand that the claims define the invention. I understand that a purpose of claim construction is to determine the meaning and scope of patent claims. I understand that claim construction is done from the perspective of a person of ordinary skill in the art at the time of invention. I understand several factors are considered in assessing the level of ordinary skill in the art at the time of invention, including (i) the problems encountered in the prior art; (ii) the prior-art solutions to those problems; (iii) the rate at which innovations are made; (iv) the sophistication of the technology; and (v) the educational level of active workers in the field.

26. I also understand that, in assessing the patentability of a patent claim, the language of the claim generally should be given its plain and ordinary

meaning as would have been understood by a POSITA at the time of the patented invention consistent with the patent specification and prosecution history.

27. It is my understanding that a POSITA is considered to read claim terms not only in the context of the particular claim in which the term appears, but in the context of the entire patent, including the specification. It is further my understanding that when construing the claims of a patent, the principal considerations are the plain language of the claim (including the surrounding claim language and context), the specification and the prosecution history, which I understand are collectively referred to as the “intrinsic evidence.” It is also my understanding that while a claim is to be read in light of the specification, one must generally avoid importing limitations into the claim from the specification. It is also my understanding that the prosecution history can often inform the meaning of the claim by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.

28. It is further my understanding that extrinsic evidence, such as dictionary definitions, may be considered in construing claim terms, although such evidence may be accorded less weight where it contradicts a meaning apparent from the intrinsic evidence.

29. It is my understanding that a claim or claim term is indefinite if it, when read in light of the patent specification and the prosecution history, fails to inform, with reasonable certainty, those of ordinary skill in the art about the scope of the invention.

A. Means Plus Function

30. I understand that a patentee may choose to express a claim limitation by reciting a function to be performed rather than by reciting a structure to perform that function. If the patentee chooses to recite its limitations in terms of the function to be performed, I understand that the claims may be limited to the structures, materials, or acts described in the specification, and their equivalents, as corresponding to that function. I understand this is called means-plus-function claiming.

31. More specifically, I understand that where a claim element is described in terms of the function it performs rather than the structure of the element, it is considered a “means-plus-function” element under the patent law. I understand that such claim elements often, but not always, take the form of reciting a “means for” performing a function. I understand that, even if the term “means” is not used in connection with the recited function, the element may nonetheless be a means-plus-function element under the patent law where the element would not be understood by a person skilled in the art as describing a

sufficiently definite structure or the element recites function without reciting sufficient structure for performing the function. I understand this often occurs when the claim element uses, in place of “means,” a generic nonce word that does not connote a specific structure, such as “element,” “mechanism,” or “module.”

32. I also understand that in cases where a claim term is evaluated as a means-plus-function element, it is construed in a two-step process: First, one identifies the function. Second, one identifies the structure described in the patent specification that is clearly linked to the function recited in the claim.

33. A claim element construed as a means-plus-function element encompasses the corresponding structure described in the specification and equivalents thereof.

B. Indefiniteness

34. I have been informed that indefiniteness is inextricably intertwined with claim construction. It is my understanding that if a POSITA cannot determine the scope of a claim with reasonable certainty, it may be because one or several claim terms cannot be reliably construed.

35. I understand that to be definite, a patent’s claim, viewed in light of the specification and the prosecution history, must inform those skilled in the art about the scope of the invention with reasonable certainty or it is invalid as being

indefinite. I understand that claims are indefinite when they do not particularly point out and distinctly claim the subject matter regarded as the invention.

36. Specifically, I understand that “a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patents and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Inst., Inc.*, 572 U.S. 898, 901 (2014).

37. While I understand that the definiteness requirement must take into account the inherent limitations of language, I understand that patents must be precise enough to afford clear notice of what is claimed, thereby apprising the public of what is still open to them. This “reasonable certainty” standard reflects a public notice function regarding the scope of a patent’s claims and is intended to avoid zones of uncertainty in a patent’s claims.

38. I have also been informed that the patent’s claims must provide objective boundaries for a POSITA, and that indefiniteness may arise if the claim language could mean several different things (or the claim fails to distinguish between multiple possible interpretations), and where no informed choice is available among the contending definitions. I have further been informed that a “subjective: claim term having a scope that depends on a particular person’s opinion (and that may vary from person to person) may be indefinite.

V. PERSON OF ORDINARY SKILL IN THE ART

39. I understand that when interpreting the claims of the '953 patent, I must do so based on the perspective of a POSITA at the relevant priority date of the '953 patent. I have been asked to presume that the priority date for the '953 patent is August 8, 2006.

40. I understand that this POSITA is a hypothetical person who is presumed to be aware of all pertinent prior art. I have also 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 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.

41. I am 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. For purposes of this Declaration, I believe that a POSITA would have been someone with 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. This level of skill is approximate, and more experience would compensate for less formal education, and vice versa. For example, an individual

having a BS degree in mechanical engineering, but ten years of ski binding design, manufacture, or testing experience would qualify as a POSITA.

42. I consider myself to have such “level of ordinary skill in the art” with respect to the subject matter of the ’953 patent at the time of the application. Thus, I am able to opine on how the person of ordinary skill would have understood the disclosure and claims of the ’953 patent, the disclosures of the prior art, the motivations to combine the prior art, and what combinations would or would not have been obvious to one of ordinary skill in the art.

VI. THE ’953 PATENT

A. The ’953 Patent and Specification

43. The ’953 patent, entitled “Alpine Ski Binding System Having Release Logic for Inhibiting Anterior Cruciate Ligament Injury,” was filed on August 6, 2007, and issued on April 28, 2009. Ex-1001, 1:1-10. As I understand, the ’953 patent claims priority to U.S. Provisional Patent Application No. 60/836,454, filed on August 8, 2006. It is my understanding that VSD claims that the effective filing date of the claims of the ’953 patent is August 8, 2006. I, therefore, conduct my analysis based on VSD’s alleged priority date of August 8, 2006.

44. The ’953 patent is directed to a lateral release alpine ski binding unit that releases a ski boot from a binding in response to certain external loads, such

as those occurring that may cause anterior cruciate ligament (ACL) injury. Ex-1001, 1:14-17. Specifically, the '953 patent explains that certain external loads experienced along the ski, when transferred to the skier's leg, can cause ACL injuries. Ex-1001, 4:27-31. Thus, the '953 patent is directed to an alpine ski binding system having release logic configured to release a ski boot when a dangerous torsional load on the skier's lower leg is experienced. Ex-1001, 4:50-54.

45. As the '953 patent claims, an external load applied to the ski, creates internal loads (a first and second loading) within the ski system. Ex-1001, 21:10-16. These internal loading are assessed relative to a first and second axis. Ex-1001, 21:10-16. The '953 patent's components perform a logical operation in response to the internal forces to determine whether the binding needs to perform a secondary toe release to release the boot. Ex-1001, 9:5-8, 9:28-31.

46. More specifically, Independent Claim 53, directed to an apparatus for releasably securing a ski boot to a ski binding, is provided below as a representative claim:

Claim 53. 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;

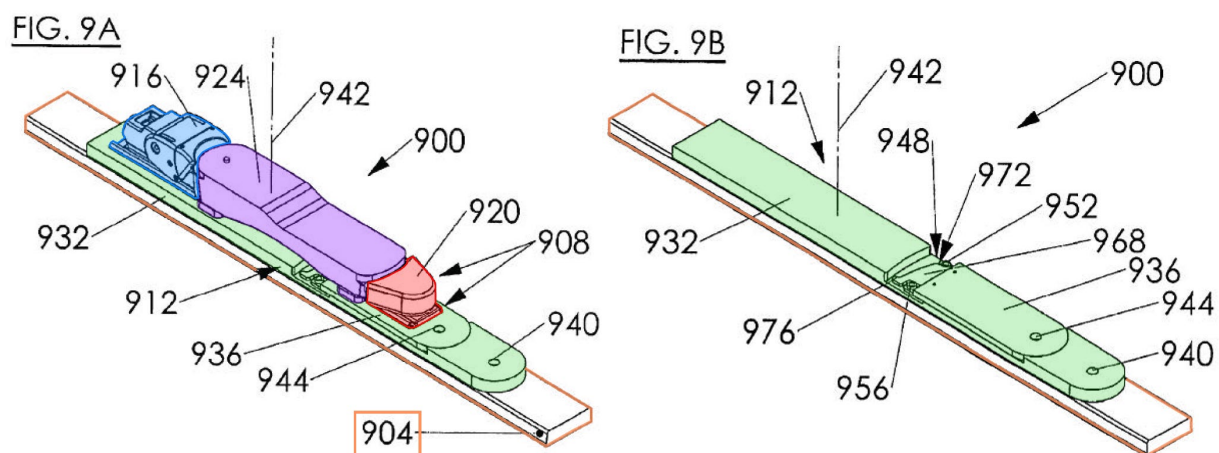
wherein said ski binding assembly has a second release, said first release being an attenuated release relative to said second release.

Ex-1001, claim 53.

47. The '953 patent explains that certain external forces experienced on the inside tail edge of the ski, when transferred to the skier's leg can cause ACL injuries. Ex-1001, 4:27-31. The claimed system therefore provides for an alpine ski binding system having release logic configured to release a ski boot when a dangerous torsional load on the skier's lower leg is experienced. Ex-1001, 4:50-54. As the patent claims, the external force applied at the medial tail edge of the ski, creates internal loads (a first and second loading) within the ski system. Ex-1001, 21:10-16. These internal loadings are relative to a first and second axis, corresponding to pivot points within the binding system at which the loads can be

assessed. Ex-1001, 21:10-16, 9:39-67. The '953 patent's components can perform a logical operation in response to the internal loads to determine whether the binding needs to release the boot. Ex-1001, 9:5-8, 9:28-31.

48. Figures 9A and 9B of the '953 patent, reproduced below, provide an overview of an alpine ski system 900 made in accordance with the purported invention. Ex-1001, 9:9-10. System 900 includes a ski 904 and a binding system 908 having a release-logic mechanism 912 and heel and toe pieces 916 and 920, respectively, for clamping a ski-boot 924 into binding system 908. Ex-1001, 9:9-16, 9:26-28.



Ex-1001, FIGS. 9A & 9B (annotated)

49. Release logic mechanism 912 is configured to “provide[] an attenuated release” of the boot from binding system 908 in response to a certain load condition. Ex-1001, 4:13-18, 9:5-10; *see also* Ex-1001, FIG. 1. Figures 10A

and 10B, reproduced below, provide a view of the ski system with **release logic mechanism 912** in a released state. Ex-1001, 10:37-43.

FIG. 10A

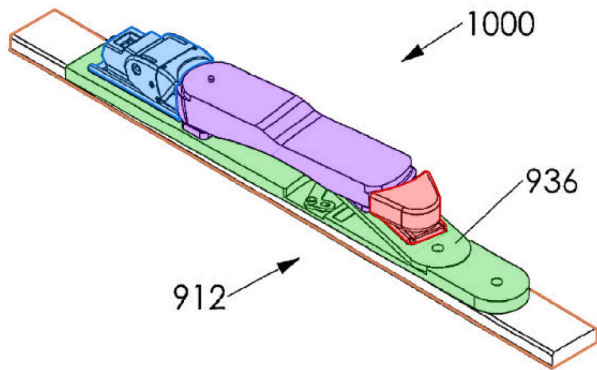
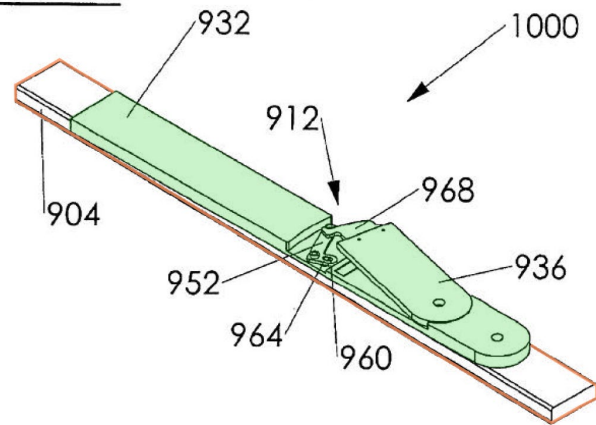


FIG. 10B



Ex. 1001, FIGS. 10A & 10B (annotated)

50. As shown in Figures 10A and 10B, in response to the application of a lateral force on the tail of the **ski** that overcomes a release threshold, **release logic mechanism 912** triggers a release, allowing the **ski boot** to be displaced laterally relative to the **ski**. Ex-1001, 10:37-46.

B. The '953 Patent's Prosecution History

51. The application that issued as the '953 patent was filed on August 6, 2007. Ex-1009, 74. The application initially included 55 claims directed to a "ski binding," a "ski binding system," and a "method of releasing a ski boot from an alpine ski binding system." *Id.*, 49-56. In a Restriction Requirement dated August 1, 2008, the examiner required an election of species from among four embodiments shown in the figures. *Id.*, 114-116. In a response dated September 2,

2008, the applicant elected “Species I,” corresponding to the embodiment of Figures 9A-11. *Id.*, 132-133; *see also id.*, 114-116. At the same time, the applicant cancelled original claims 30-55 and presented new claims 56-81, directed to an “apparatus for securing a ski boot to a ski so as to form a ski system.” *Id.*, 122-131. These new claims 56-81 included the two claims that eventually issued as independent claims 30 and 53. *Id.*, 193.

52. During prosecution, the Examiner issued one, non-final obviousness rejection based on *Hopkins* (US 6,007,086). Ex-1009, 146-154; *see* Ex. 1017. The Examiner found that *Hopkins* rendered obvious several pending claims but found the rest of the pending claims to contain allowable subject matter. Ex-1009, 147-151. Specifically, the Examiner noted that the allowable subject matter included that the ski binding assembly is configured to “determine a force-couple at a third axis from said first loading and said second loading,” the release logic is configured to “determine whether or not the release condition is occurring as a function of the force-couple,” and “the ski binding assembly has a second release, said first release being an attenuated release relative to said second release.” Ex-1009, 149-152.

53. In response, VSD amended the pending claims to include the language that the Examiner found to contain allowable subject matter. Ex-1009, 169, 177–79. The Examiner issued a notice of allowance. Ex-1009, 185.

VII. CLAIM CONSTRUCTION

54. Unless otherwise noted, I have given the claim terms their plain and ordinary meaning.

A. A First Release (Claims 53 and 58)

55. Independent claims 53 and 58 both recite “a first release.”

56. I understand that the parties have proposed the following constructions for the term “first release:”

Claim Term Requiring Construction	VSD's Proposed Construction	Head's Proposed Construction
a first release	A mechanism within the ski binding assembly that allows separation of the ski boot from the ski automatically and without skier intervention in response to a predetermined external loading of the ski correlated to an estimated tibial axis load level selected to lessen the likelihood of ACL injury (i.e. in response to the “release condition” being met).	A lateral toe release, i.e., a release of the ski boot from the toe piece of the binding in a transverse direction substantially perpendicular to the longitudinal axis of the ski. Otherwise, indefinite under § 112.

57. I believe VSD's proposed construction for “a first release” conflicts with the intrinsic and extrinsic evidence. Based on my review of the materials, including the '953 patent, the specification confirms that the first release is a lateral toe release.

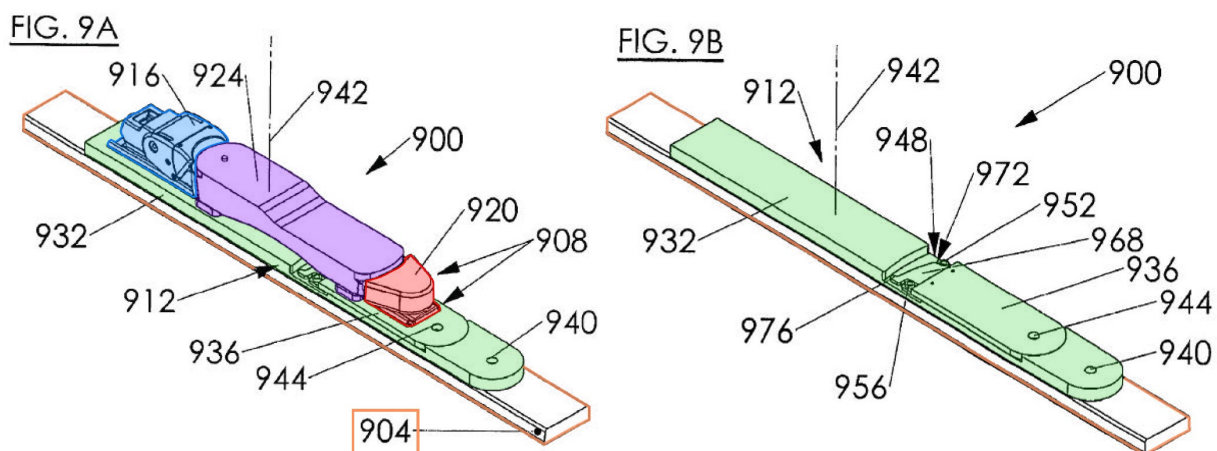
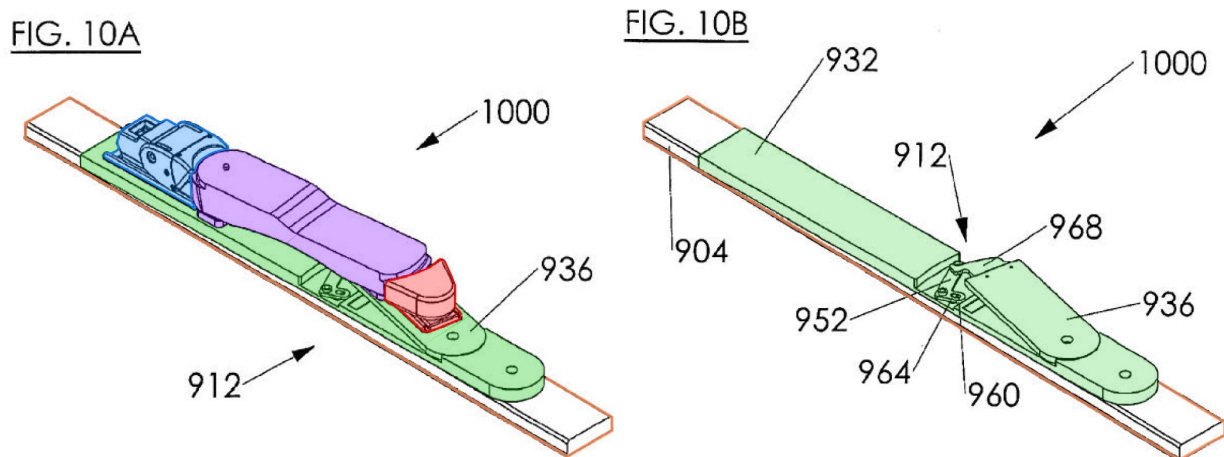
58. While I understand that it is generally improper to limit a patent claim to the embodiment disclosed in the specification, I understand that the patent's disclosure can be instructive. For instance, a construction can require a limitation where every embodiment described in the specification has that limitation and indicates its importance.

59. In this instance, the only embodiments disclosed in the patent are lateral toe release mechanisms. The patent's disclosure never discusses that its alleged mechanism may be used as a lateral heel release. Indeed, the specification's mentions of a heel piece are limited to "contemporary conventional heel" pieces "available from manufacturers such as Tyrolia, Marker, Salomon, Atomic, Rossignol, etc." This was purposeful because the named inventors sought to develop a lateral toe release platform that "could readily be sold as a retrofit component for conventional ski systems or otherwise separately from conventional skis and binding." Ex-1001, 9:22-25. Therefore, I understand that this was an intended functionality of the purported invention because the described release logic mechanism and top plate design could be used with conventional equipment and therefore could be sold and used with a wide variety of preexisting ski equipment. I understand that this was advantageous to the named inventors because as a commercial product, it did not require special

equipment and instead could be installed on a skier's existing ski and binding set up.

60. The specification even calls the release feature a “pivotal secondary *toe* release 612.” Ex-1001, 7:28-29 (emphasis added). When referring to the “alpine ski system 900 made in accordance with the present invention” (Ex-1001, 9:9-10), the named inventors explain that the release-logic mechanism 912 is made up of two primary components—“a trigger platform 932 and a secondary *toe* release 936.” Ex-1001, 9:34-36 (emphasis added). The conventional toe and heel pieces are fixedly secured to the secondary toe release 936. Ex-1001, 9:367-38. I understand that the specification repeatedly calls this a “secondary” toe release because it is secondary to the primary toe release which corresponds to the “second release” which, as VSD agrees, “is the standard release mode in typical prior art conventional alpine bindings.” Ex-1010 (VSD’s Proposed Constructions).

61. In addition, each of the figures in the patent show a specific lateral toe release using a pivotal top plate. Ex-1001, 9:4-10:20, FIGS. 9A-10B. There is no indication anywhere in the patent that a lateral heel release may be used with the purported invention, or how a theoretical lateral heel release might look or work. This is apparent from FIGS. 9 and 10, for example.

**Ex-1001, FIGS. 9A-9B¹****Ex-1001, FIGS. 10A-10B**

62. The figures depict a lateral release at the toe piece due to the pivotable top plate. As explained above, the specification specifically teaches that the alleged invention is intended to be used with a conventional toe and heel piece. Indeed, as shown above, Figures 9A and 9B provide an overview of an

¹ Annotations have been added to all figures in this declaration unless noted otherwise.

alpine ski system 900 made in accordance with the purported invention. Ex-1001, 9:9-10. System 900 includes a ski 904 and a binding system 908 having a release-logic mechanism 912 and conventional heel and toe pieces 916 and 920, respectively, for clamping a ski-boot 924 into binding system 908. Ex-1001, 9:9-28.

63. Release logic mechanism 912 is configured to “provide[] an attenuated release” of the boot from binding system 908 in response to a certain load condition. Ex-1001, 4:13-18, 9:5-10. Figures 10A and 10B provide a view of the ski system with release logic mechanism 912 in a released state. Ex-1001, 10:37-43. As can be seen in Fig. 10A-10B, it is the release logic mechanism 912 that allows a top plate to pivot thereby allowing the boot to be released laterally at the toe piece.

64. Therefore, based on the specification, the only reasonable construction of “a first release” is that it is a first lateral toe release.

65. The claims need to inform those skilled in the art about the scope of the invention with reasonable certainty. The only way a POSITA would be informed about the scope of the invention with reasonable certainty is if the claim term was “a lateral toe release.” If “a first release” is not limited to a lateral toe release, then the skilled artisan would not be informed how the claims can cover a lateral heel release.

66. As explained above, the specification provides examples of the alleged invention, each of which is narrow and focused only on a lateral release of the ski boot from the binding at the toe based on a pivotable top plate. Ex-1001, FIGS. 9A-10B. Outside of a lateral release of the toe, the '953 patent provides no guidance on the bounds of the "secondary toe release," which would leave a person of ordinary skill in the art to conclude that the bounds could only be a lateral toe release.

67. In fact, the '953 patent explains that it is "directed to 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." Ex-1001, 4:13-16. The '953 patent continues that "this region [referring to the region of the ski on the medial side of the ski, rearward of the tibial axis of the leg of a skier] is denoted for convenience 'quadrant 3,' 'Q3,' 'third quadrant,' or a like term." Ex-1001, 4:13-16.

68. The specification explains that the conventional "toe release type binding of FIG. 2 fails to sense the true load on the skier's leg in quadrant Q3." Ex-1001, 6:53-67 (also explaining that the conventional "heel release type binding of FIG. 3 fails to sense the true load on the skier's leg in quadrant Q1 and Q2"). Therefore, because the '953 patent is focused on the lateral release for forces in the third quadrant, Q3, which are inadequately sensed by conventional toe release

bindings, a POSITA would have understood that the '953 patent only describes a lateral toe release that seeks to solve the deficiencies with conventional toe release type bindings. Ex-1001, 6:53-56.

69. This is also evidenced by the '953 patent's example calculations in the specification. The '953 patent provides example calculations in a table for "a ski system made in accordance with the present invention." Ex-1001, 7:1-4, 38-66. In this table, the '953 patent provides that the binding pivot is 6.6 cm behind the tibial axis, closer to the tail of the ski. Ex-1001, 7:56-63. This would indicate to a POSITA that the '953 patent's ski system describes a lateral toe release binding because it is pivoting around an axis behind the tibial axis. If it were a lateral heel release binding, the binding pivot axis would be forward of the tibial axis closer to the tip of the ski.

70. Notably, I understand that VSD has asserted the '953 patent against Head in the present litigation based on certain of Head's protector bindings, each with a lateral heel release. The '953 patent provides no examples or guidance that would allow the scope of the claims to cover a lateral heel release to a person of ordinary skill in the art.

71. This is further supported by the named inventor's own description. The named inventor, when discussing this patent with Head, declared to Head that the invention did not cover heel release and only covered a toe release. Ex-1021

(November 24, 2017, email from Dodge to Stanzl). To hold otherwise would now be improper and, in my opinion, would mean that the asserted claims are indefinite.

72. Moreover, VSD's proposed construction for "a first release" creates even more ambiguity and would further render the claim term indefinite. I understand that VSD has proposed that "a first release" means "a mechanism within the ski binding assembly that allows separation of the ski boot from the ski automatically and without skier intervention in response to a predetermined external loading of the ski correlated to an estimated tibial axis load level selected to lessen the likelihood of ACL injury (i.e., in response to the "release condition" being met." VSD's proposal to inject "a predetermined external loading of the ski correlated to an estimated tibial axis load level selected to lessen the likelihood of ACL injury" invites a subjective determination such that a POSITA would not be reasonably informed as to the claim scope. The '953 patent does not explain how to "predetermine" an external loading of the ski or what that "predetermined" level should be. The correlation to an estimated tibial axis load level selected to lessen the likelihood of ACL injury is also a subjective determination because it is understood that a load level likely to cause ACL injury varies from person to person and involves several variables. The '953 patent provides no explanation for how these load levels are estimated or determined, and it leaves a POSITA

guessing as to how to determine “a predetermined external loading of the ski correlated to an estimated tibial axis load level selected to lessen the likelihood of ACL injury.”

73. Regardless, there is no support for this lengthy definition in the intrinsic record for a first release and importing these additional limitations into “a first release” would render several later claim terms meaningless, such as “release condition,” which VSD contends is defined as “a predetermined external loading of the ski correlated to an estimated skier tibial axis load level selected to lessen the likelihood of ACL injury.”

B. Release Logic Terms (Claims 53 and 58)

74. Independent claims 53 and 58 both recite “release logic.”

75. I understand that the parties have proposed the following constructions for the term “release logic.”

Claim Term Requiring Construction	VSD’s Proposed Construction	Head’s Proposed Construction
Release logic	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	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

	would indicate risk of ACL injury (i.e., the release condition).	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.
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76. As stated above, I understand that a means plus function analysis is a two-step process. I understand that I must first determine whether a claim limitation is drafted in means plus function formation, which requires me to determine whether the limitation connotes sufficiently definite structure to a person of ordinary skill in the art. I further understand that if the limitation does not connote sufficiently definite structure and is in a means plus function format, that I must then perform the second step of the analysis of determining what structure, if any, disclosed in the specification corresponds to the claimed function.

77. 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.

78. As I understand, generic terms such as “element,” “mechanism,” “module,” 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. In 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.

79. VSD appears to have, in my opinion, replaced the word “means” with “logic.” For instance, the claim would be no different if it was written as “said ski binding assembly including release [*means*] that cause the ski binding assembly to release the ski boot at said first release in response to a release condition.” Ex-1001, claim 53.

80. Moreover, a person of ordinary skill in the art at the time would have recognized that the term “logic” may generally be used to refer to a process or algorithm to be implemented electronically. I understand that “logic” can also refer even more broadly to any definition of one or more decisions and consequent actions.

81. Taking into account the entire phrase, the knowledge in the art, the specification, and the prosecution history, a POSITA would clearly understand this claim term to be a placeholder for any means that perform the recited function of “determine[ing] whether or not the release condition is occurring as a function of both the first loading and second loading; and caus[ing] said ski binding assembly to provide said first release if . . . the release condition is occurring.”

82. This is true even though the claim language does not specifically include the term “means” because “release logic that causes” is understood to be another way of saying “means for.”

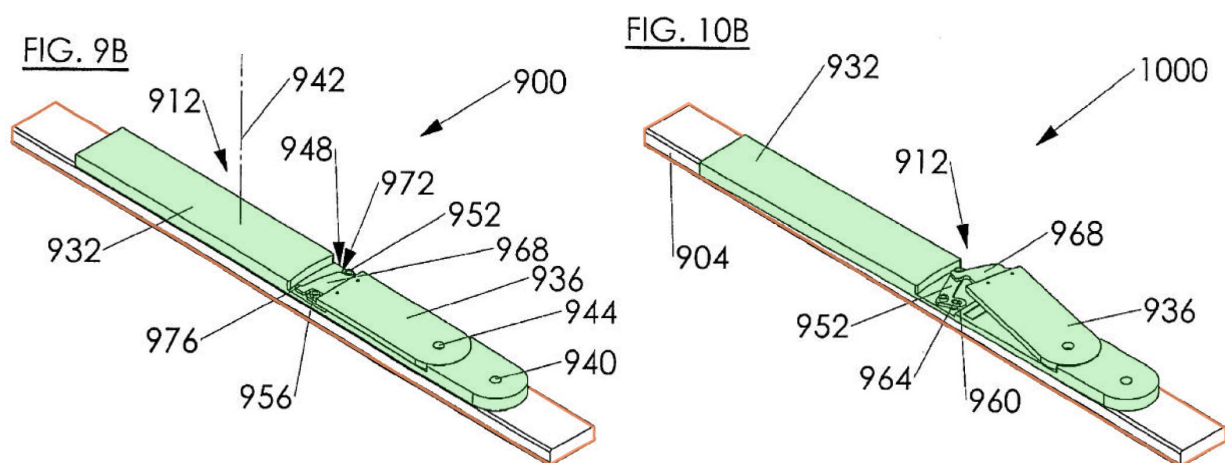
83. In my opinion, the function of the “release logic” is to laterally release the toe of the ski boot from the ski binding. Thus, in my opinion, this limitation must be construed to cover the corresponding structure, material, or acts described in the specification.

84. 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. Ex-1001, 9:9-45, 9:65-10:46, 12:34-13:12; 14:14-20.

85. The specification expressly discloses that the release logic has “two primary components” — “a trigger platform 932 and a secondary toe release 936.” Ex-1001, 9:34-36.

86. It further provides that only when these two features pivot will the boot be released. Ex-1001, 10:21-33. Specifically, the specification of the ’953 patent explains that when the trigger platform 932 experiences a threshold-exceeding torque in response to a shear force, it will pivot. *Id.*, 10:21-28. The ’953 patent further explains that the pivoting of the trigger platform 932 causes a latch 952 to move out of engagement with a catch 968 on the secondary toe release, thus freeing the secondary toe release and allowing it to pivot in response to a torque exceeding the secondary release torque. *Id.*, 10:24-33; *see also* Ex-1001, 10:43-46 (requiring a trip plate trigger torque and a secondary toe release torque).

87. Further, as described above in Sections VI.A and VII.A, the patent specifically identifies the “release logic mechanism 912,” which is shown in green in the below annotated Figures 9B and 10B:

**Ex-1001, FIGS. 9B & 10B**

88. Thus, as defined by the intrinsic record, the release logic requires specific features, as shown in annotated Figures 9B and 10B—including, at least, a trigger platform and a secondary toe release. The corresponding structure of these features is also shown in Figures 6, 9A-9B, and 10A-10B, below (each in original format, containing no annotations).

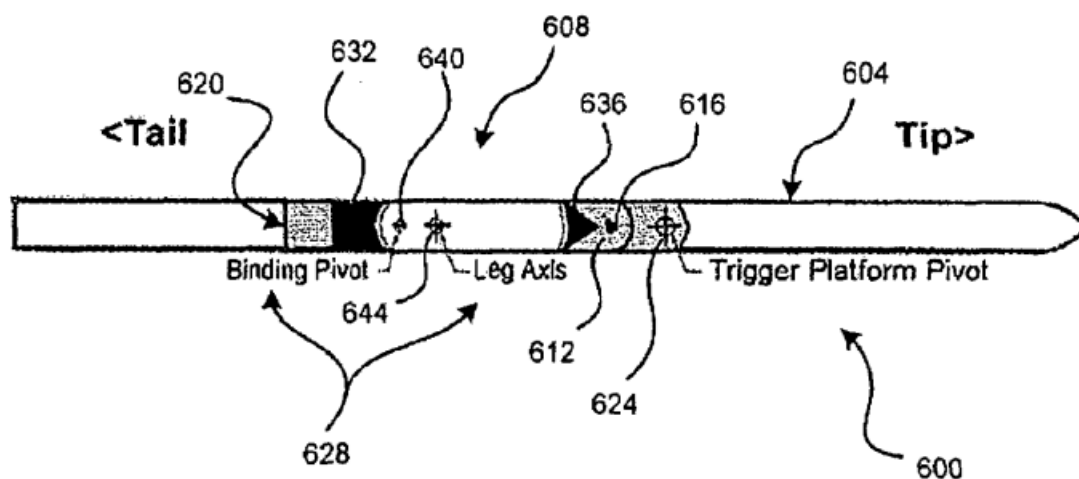
**FIG. 6**

FIG. 9A

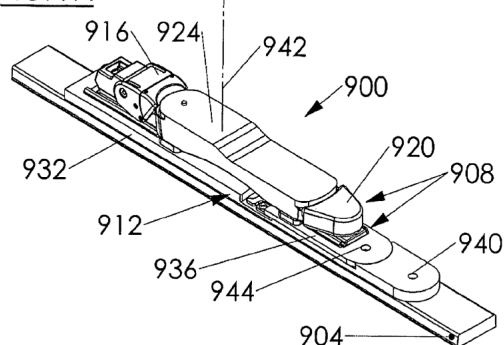


FIG. 9B

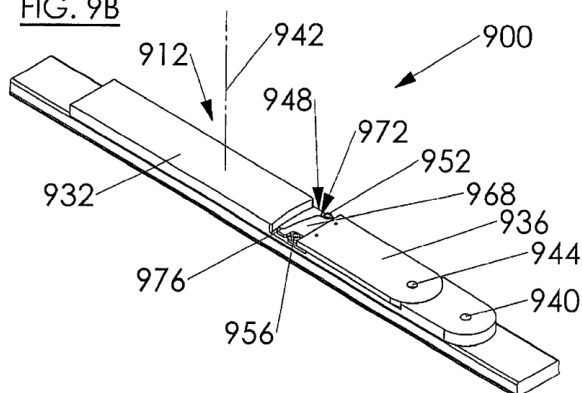


FIG. 10A

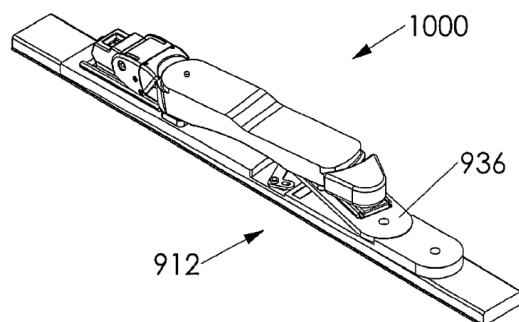
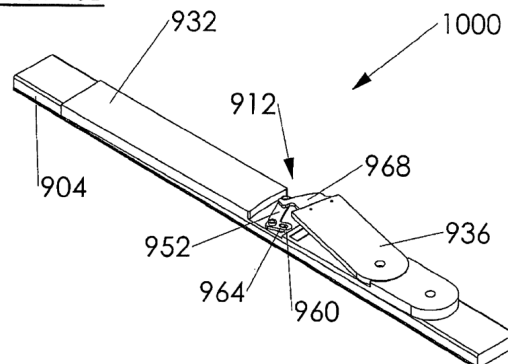


FIG. 10B



89. Thus, 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.

C. Release Condition (Claim 53)

90. Independent claim 53 recites “release condition.”

91. I understand that the parties have proposed the following constructions for the term “release condition.”

Claim Term Requiring Construction	VSD’s Proposed Construction	Head’s Proposed Construction
Release condition	A predetermined external loading of the ski correlated to an estimated skier tibial axis load level selected to lessen the likelihood of ACL injury.	A release condition occurs when a load applied to the ski binding exceeds a certain magnitude, requiring a release of the ski boot from the ski binding.

92. VSD’s proposed claim construction for the “release condition” term is unsupported by the intrinsic record, and it is VSD’s proposed construction that creates ambiguities such that claim construction is necessary.

93. The specification of the ’953 patent provides that the “released state 1000 is substantially only achieved from the unreleased state upon application of a shear force to the third-quadrant of ski 904 that exceeds both the trip plate trigger torque and the secondary toe release torque.” Ex-1001, 10:43-46. This is explaining the “release condition”—the *condition* that needs to be satisfied for the “release logic [to] cause[] the ski binding assembly to release the ski boot.” Ex-1001, claim 53.

94. Thus, as the '953 patent explains, there needs to be a shear force of such magnitude that the trigger platform pivots (Ex-1001, 10:19-28), which then allows the secondary toe release 936 to freely “pivot in response to a torque exceeding the secondary release torque.” Ex-1001, 10:29-33.

95. Therefore, based on the intrinsic record, a POSITA would understand that the “release condition” occurs when a load applied to the ski binding exceeds a certain magnitude, requiring a release of the ski boot from the ski binding.

96. In my opinion, VSD’s proposed construction creates even more ambiguity and would further render the claim term indefinite. VSD’s proposal to inject “a predetermined external loading of the ski correlated to an estimated tibial axis load level selected to lessen the likelihood of ACL injury” invites a subjective determination such that a POSITA would not be reasonably informed as to the claim scope. The '953 patent does not explain how to “predetermine” an external loading of the ski or what that “predetermined” level should be. The correlation to an estimated tibial axis load level selected to lessen the likelihood of ACL injury is also a subjective determination because it is understood that a load level likely to cause ACL injury varies from person to person and involves several variables. The '953 patent provides no explanation for how these load levels are estimated or determined, and it leaves a POSITA guessing as to how to determine “a

predetermined external loading of the ski correlated to an estimated tibial axis load level selected to lessen the likelihood of ACL injury.”

D. Axis Terms (Claims 53 and 58)

97. Independent claims 53 and 58 both recite the axis terms.

98. I understand that the parties have proposed the following constructions for the axis terms.

Claim Term Requiring Construction	VSD's Proposed Construction	Head's Proposed Construction
First axis	An axis of rotation substantially perpendicular to the plane of the ski at a specific point on the ski relative to the tibial axis. (The first axis is the location at which the first loading is assessed as a trigger for enabling the first release)	Indefinite under § 112
Second axis	An axis of rotation parallel to and spaced from the “first axis,” and substantially perpendicular to the plane of the ski at a different specific point on the ski relative to the tibial axis (The second axis is the location at which the second loading is assessed to permit the first release to occur.)	Indefinite under § 112

99. Based on my review of the claims and the specification of the '953 patent, it is my opinion that the axis terms do not inform, with reasonable certainty, those of ordinary skill in the art about the scope of the invention. There are no objective standards for a person of ordinary skill in the art to apply. Thus, a person of ordinary skill in the art cannot determine the location or scope of the axis terms with any reasonable certainty.

100. The claims recite that there is "a first axis" and "a second axis." In certain claims, like independent claim 53, the claims require that "a second axis [is] spaced from said first axis and substantially parallel to said first axis." Independent claim 58 removes this requirement, and merely provides for a first axis and a second axis without limiting their direction or relation to one another.

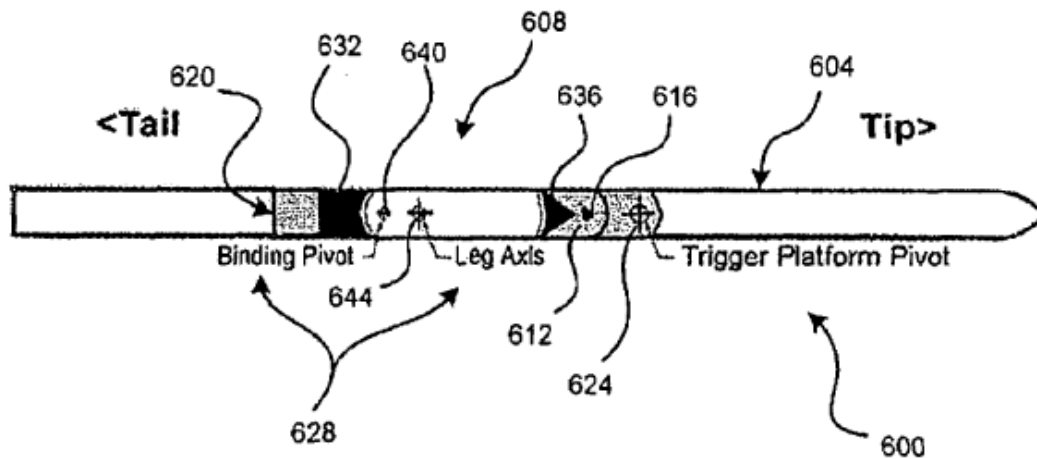
101. Even with the "spaced from" and "substantially parallel to" language from claim 58, a person of ordinary skill in the art is not able to determine the location or scope of the axis terms with any reasonable certainty. The fact that the axes are "spaced from" and "substantially parallel" does not provide any certainty as to the meaning or location of the claim terms. For instance, is there a certain distance along the ski or from the center of the ski at which the axis can be placed? The specification of the '953 patent provides no guidance. There are no functional criteria to provide an objective standard because an axis can be placed anywhere.

102. The location of these axes is arbitrary with no specific physical definition. Neither the claim language nor the specification explains to a person of ordinary skill in the art where to subjectively place a theoretical first and second axis. Without these defined locations, a person of ordinary skill cannot “assess” loadings relative to these axes because the axes’ locations will alter the assessed load.

103. Thus, a POSITA could theoretically place the first axis and the second axis anywhere along the ski. A POSITA has no way to navigate the nearly endless possibilities.

104. In my opinion, this is not a trivial argument, as any analysis of whether an alpine ski binding meets the limitations of this claim must start with an identification of the first and second axes about which the first and second loading are assessed, respectively.

105. For instance, the specification further provides that “[t]he performance of binding system 608 is controlled by a number of factors, including the location of the trigger platform pivot axis 624 [and] the location of the binding pivot axis 640.” Ex-1001, 8:6-9.

**FIG. 6**

106. With respect to Figure 6 of the specification, the '953 patent explains that the ski assembly includes a “binding pivot axis 640 close to the heel piece” as well as a “pivotal secondary toe release 612 pivotable about a pivot axis 616 and a pivotable trigger, here a trigger platform 620, pivotable about a pivot axis 624. Ex-1001, 7:31-34.

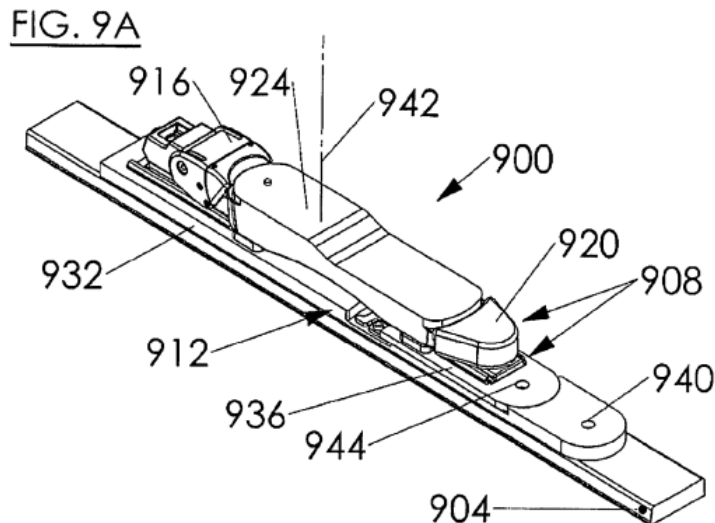
107. VSD did not inform a POSITA which of these axes, *if any*, represents a first axis and which, *if any*, represents a second axis. Regardless, each of these axes are set by specific structures. For instance, the binding pivot 640 is set by the pivot axis of the binding; the trigger platform pivot axis 624 is set by the pivot axis of the trigger platform; and the secondary toe release pivot axis 616 is set by the pivot axis of the secondary toe release. Without these specific features, a pivotable binding, a trigger platform, and/or a secondary toe release, a POSITA has no way to determine where these relative axes are located or if they exist in

the system at all. Thus, without a pivotable binding, a pivotable trigger platform, and/or a pivotable secondary toe release, the first axis and second axis cannot be defined. But even if a binding did have a pivotable binding, a trigger platform, and a secondary toe release, the '953 patent does not inform a POSITA which of these three features align with the first and second axes.

108. Further, I understand that these axes cannot be arbitrarily assigned because then a POSITA would have no way to determine whether or not they are infringing upon the purported claim scope. There is no objective standard by which a POSITA would know where to place the first axis and second axis.

109. A POSITA would have understood that the location of the axes, without more information, are subjective to a particular person. Two reasonable people could select different axes and under one interpretation could hypothetically infringe and under the other interpretation could be clear of infringement. As the specification of the '953 patent provides, “[t]he performance of binding system 608 is controlled by a number of factors, including the location of the trigger platform pivot axis 624 [and] the location of the binding pivot axis 640.” Ex-1001, 8:6-9. Thus, the assessment and value of the internal loadings changes just by virtue of changing the point where you place your first and second axes, even though there had been no actual change in the magnitude of the external loading.

110. The ski is made up of infinite points and there is no basis in the specification for a POSITA to pick one over any other. The location of the axes could only be determined on a user-by-user basis and would change for each person. In each embodiment in the '953 patent, the specification provides that the trigger platform pivot axis 624 and the secondary toe release pivot axis 616 are “located forward of the toe of the ski boot.” Ex-1001, 8:4-6; *see* FIG. 6 (above). This is also the case for the embodiment in Figure 9, which provides that the “trigger platform 932” pivots about “pivot point 944 located between the toe end of the ski-boot sole 924 (FIG. 9A) and pivot point 940 of the trigger platform” (Ex-1001, 9:65-10:1), which is “a pivot point 940 located forward (toward the tip of the ski) of the toe end of the ski-boot sole 924).



111. Therefore, in my opinion, the axes terms do not inform, with reasonable certainty, those of ordinary skill in the art about the scope of the

invention because they can be arbitrarily selected and because the alleged invention's functionality "is a function of the location of" the pivot points. Ex-1001, 9:56-59. A person of ordinary skill in the art would not be able to locate the claimed first and second axes with any certainty.

112. Moreover, I understand that even VSD's own construction acknowledges that these terms have no specific location and are seemingly picked at random. Ex-1010, 8-9. More specifically, VSD's proposed construction states that these are axes of rotation "at a specific point on the ski relative to the tibial axis." *Id.* This invites a subjective determination of where the specific point is located on the ski.

113. VSD's proposed construction also invites further error because it does not even seek to limit the first and second axes to locations in front of the toe of the ski boot (toward the tip of the ski), as the '953 patent discloses. Ex-1001, 9:39-41; *see* FIGS. 6 and 9. Thus, even under VSD's proposed construction, these terms are indefinite.

114. What's more, VSD appears to contend without support that the axes of rotation are "perpendicular to the plane of the ski." This is not supported in the claim language and would be inconsistent with the other claims of the patent.

115. I understand that different claim terms have to have different meanings.

116. Claim 58 requires “a first loading, internal to the ski system along or about a first axis,” and “a second loading, internal to the ski system along or about a second axis.” Ex-1001, claim 58. This claim does not limit the direction of either the first or second axis nor does it limit the relation of one axis to the other. This is in stark contrast to claim 53, for example, which provides “assess, relative to a first axis, a first loading,” and “assess, relative to a second axis spaced from said first axis and substantially parallel to said first axis, a second loading.” Ex-1001, claim 53.

117. VSD’s attempt to construe the first axis and second axis in each of claims 53 and 58 to be “substantially perpendicular to the plane of the ski” would render claim 53’s limitation that the first axis and second axis need to be “substantially parallel” meaningless. If, as VSD proposes, the axes in claim 58 are to be considered perpendicular to the plane of the ski, then there would be no need for claim 53 to require that the axes be “substantially parallel” because they would be parallel already. Therefore, VSD’s proposed construction fails to make sense.

118. Thus, in my opinion, the axes terms are indefinite for failing to inform, with reasonable certainty, those of ordinary skill in the art about the scope of the invention. But, in any event, the axes cannot be defined to be perpendicular to the plane of the ski because that would render meaningless other claim limitations that were chosen by the patentee for a reason.

E. Loading Terms (Claims 53 and 58)

119. Independent claims 53 and 58 both recite the loading terms.

120. I understand that the parties have proposed the following constructions for the loading terms.

Claim Term Requiring Construction	VSD's Proposed Construction	Head's Proposed Construction
First loading	A torque, moment or force resolvable at the first axis in response to an externally applied load on the ski	Indefinite under § 112
Second loading	A torque, moment or force resolvable at the second axis in response to an externally applied load on the ski	Indefinite under § 112

121. I understand that each of the asserted claims require the first and second loadings to be “relative to” or “along or about” the first and second axes, respectively. Because the first and second axes elements are rendered indefinite, as explained above, the '953 patent also fails to inform, with reasonable certainty, those of ordinary skill in the art about the scope of the loading terms.

122. Moreover, based on my review of the claims and the specification of the '953 patent, it is my opinion that the loading terms do not inform, with reasonable certainty, those of ordinary skill in the art about the scope of the invention. There are no objective standards for a person of ordinary skill in the art

to apply. Thus, a person of ordinary skill in the art cannot select first and second internal loadings with any reasonably certainty.

123. The identification of a first loading and a second loading is arbitrary with no specific physical definition. Neither the claim language nor the specification explains to a POSITA where to subjectively determine and assess a first internal loading and a second internal loading.

124. What the specification of the '953 patent does provide is that there is a trigger platform 932. Ex-1001, 10:21-33. When the trigger platform 932 experiences a threshold-exceeding torque in response to a shear force, it will pivot. *Id.*, 10:21-28. As the '953 patent explains, the pivoting of the trigger platform 932 causes a latch 952 to move out of engagement with a catch 968 on the secondary toe release, thus freeing the secondary toe release and allowing it to pivot in response to a torque exceeding the secondary release torque. *Id.*, 10:24-33; *see also* Ex-1001, 10:43-46 (requiring a trip plate trigger torque and a secondary toe release torque).

125. Thus, these loadings are purportedly tied to specific features of the '953 patent. Without the specific features—a trigger platform and a secondary toe release—the loadings terms do not inform, with reasonable certainty, those of ordinary skill in the art about the scope of the invention. If the first and second loadings are not limited to the forces applied to a trigger platform and a secondary

toe release, respectively, then there are no objective standards for a POSITA to apply and a POSITA would have no way to determine whether or not they are infringing upon the purported claim scope.

126. In fact, an external force applied to the ski may produce nearly infinite number of internal loads within the ski system at all points along the ski, and there would be no basis for a POSITA to pick one loading over any other.

127. Moreover, VSD's proposed construction for the loading terms create more ambiguity and do not resolve, with reasonable certainty, which of the seemingly many forces are a first loading or a second loading.

F. Assess Terms (Claim 53)

128. Independent claim 53 recites the assess terms.

129. I understand that the parties have proposed the following constructions for the assess terms.

Claim Term Requiring Construction	VSD's Proposed Construction	Head's Proposed Construction
assess, relative to a first axis, a first loading internal to the ski system caused by an external loading	"internal to the ski system caused by an external loading applied to the ski system" – refers to loads acting on and between parts of the ski binding assembly as a result of a load applied externally to the ski system such as by impact of a ski edge on the snow	Indefinite under § 112

applied to the ski system;	Overall construction: provide an indication of or a response to a magnitude and direction of the first loading at the first axis by permitting or causing movement of one or more mechanical components or creating an electronic signal when an external load, such as an impact on the snow, is applied to the ski	
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;	“internal to the ski system caused by the external loading applied to the ski system” also as defined above. Overall construction: provide an indication of or a response to a magnitude and direction of the second loading at the second axis by permitting or causing movement of one or more mechanical components or creating an electronic signal when an external load, such as an impact on the snow, is applied to the ski	Indefinite under § 112

130. I understand that each of the assess terms requires the first and second loadings to be “relative to” the first and second axes, respectively. Because the first axis and second axis elements and the first loadings and second loadings elements are rendered indefinite, as explained above, the ’953 patent also fails to

inform, with reasonable certainty, those of ordinary skill in the art about the scope of these assess terms.

131. Because any analysis of whether an alpine ski binding meets the limitations of this claim must start with an identification of the axes and then an “assessment” of the internal loadings about those axes, VSD did not clearly define what is meant by the “assess” terms. A POSITA is left guessing what is to be assessed, about where it is assessed, and what to do with that assessment.

132. VSD appears to contend that “assess” includes “permitting or causing movement of one or more mechanical components or creating an electronic signal when an external load, such as an impact on the snow, is applied to the ski.” Further, VSD seeks to change “assess” to “provide an indication of or a response to a magnitude and direction of.” There is no support in the intrinsic record for these changes. The word assess is never used in the specification of the ’953 patent. Moreover, nothing in the specification of the ’953 patent provides any meaningful guidance as to what it means to “assess” the arbitrary first and second loadings about the arbitrarily assigned first and second axes, respectively.

133. In my opinion, VSD’s proposal seeking to rewrite the claims to inject more limitations confirms my opinion that the “assess” terms are not reasonably understandable by a POSITA.

G. Determine Whether or Not the Release Condition is Occurring as a Function of Both the First Loading and the Second Loading (Claim 53)

134. Independent claim 53 recites “determine whether or not the release condition is occurring as a function of both of the first loading and the second loading.”

135. I understand that the parties have proposed the following constructions for this term:

Claim Term Requiring Construction	VSD’s Proposed Construction	Head’s Proposed Construction
determine whether or not the release condition is occurring as a function of both of the first loading and the second loading	the ski binding assembly release logic indicating occurrence or nonoccurrence of the release condition dependent upon the assessments of the first loading and second loading (which causes a result as thereafter stated in the claim)	Indefinite under § 112

136. Because the first and second axes elements and first and second loadings elements are rendered indefinite, as explained above, the ’953 patent also fails to inform, with reasonable certainty, those of ordinary skill in the art about the scope of this term.

137. Moreover, based on my review of the claims and the specification of the '953 patent, it is my opinion that this term does not inform, with reasonable certainty, those of ordinary skill in the art about the scope of the invention. There are no objective standards for a POSITA to apply.

138. The claim merely requires that the release logic should determine whether or not a release condition is occurring as a function of both the first loading and the second loading, but it does not provide a POSITA with an equation or objective determination to understand what the function is or how the necessary determination is made. Thus, a POSITA cannot determine the claim scope of this element with any reasonable certainty.

139. For instance, VSD contends that the release condition is predetermined external loading of the ski correlated to an estimated skier tibial axis load level selected to lessen the likelihood of ACL injury. But the '953 patent does not explain what function, magnitudes, or directions of the first and second loadings will create the likelihood of ACL injury.

H. A Second Release (Claims 53 and 58)

140. Independent claims 53 and 58 both recite "second release."

141. I understand that the parties have proposed the following constructions for the term "second release."

Claim Term Requiring Construction	VSD's Proposed Construction	Head's Proposed Construction
A second release	A mechanism of the ski binding assembly that allows separation of the ski boot from the ski automatically and without skier intervention (i.e., releases) in response to a predetermined external loading of the ski correlated to an estimated maximum tibial axis load level selected to lessen the likelihood of tibial shaft injuries such as tibial spiral fractures. The second release is the standard release mode in typical prior art conventional alpine bindings	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 substantially perpendicular to the longitudinal axis of the ski. Otherwise, indefinite under § 112

142. I believe VSD's proposed construction for "a second release" conflicts with the intrinsic and extrinsic evidence. Based on my review of the materials, including the '953 patent, the specification confirms that the second release is a second lateral toe release, which, as VSD seemingly admits, corresponds with the standard lateral toe release mode in typical prior art conventional alpine bindings.

143. The '953 patent discloses a "secondary toe release" because there are two toe releases—a first release, corresponding to the reduced secondary toe

release, and a second release, corresponding to the conventional toe release of the prior art alpine bindings.

144. The '953 patent discloses the “conventional toe release type bindings,” and compares the release envelopes of the binding of the '953 patent (Figure 5) to that of certain of the conventional bindings (Figure 2). Ex-1001, 5:63-67, 7:13-15.

145. The '953 patent even explains that the conventional toe release functionality is there to release the ski boot when the release condition for the secondary toe release does not occur, i.e., “the attenuated release of secondary toe release 1228 is not active.” Ex-1001, 13:39-42 (explaining that “[w]hen latch 1448 is securely engaged with catch 1473, the attenuated release of secondary toe release 1228 is not active and toe piece 1216 (FIG. 12) functions as it would in a conventional ski system”).

146. Therefore, based on the '953 patent's claims and specification, and my experience in the industry at the time of the purported invention, it is my opinion that the only reasonable construction of “a second release” is that it is a second lateral release of the toe of the boot permitted by the toepiece mechanism per se of conventional bindings, being complementary to the first lateral release of the toe of the boot under certain loading conditions designed to prevent ACL injuries.

147. Moreover, as stated above and for the same reasons, a POSITA would understand that “a first release” corresponds to a lateral toe release enabled by the mechanism in the ’953 patent, a POSITA would likewise understand that “a second release” refers to a second lateral toe release permitted by the toepiece mechanism per se.

I. An Attenuated Release (Claims 53 and 58)

148. Independent claims 53 and 58 both recite “attenuated release.”

149. I understand that the parties have proposed the following constructions for the term “attenuated release.”

Claim Term Requiring Construction	VSD’s Proposed Construction	Head’s Proposed Construction
An attenuated release	A release of the ski binding assembly that occurs at lower tibial axis loading relative to another release	A lateral toe release wherein the torque exceeds a lower release threshold or level. Otherwise, indefinite under § 112.

150. The specification explains that the attenuated release is an attenuated lateral release at the toe compared to a non-attenuated lateral release at the toe. For instance, the specification of the ’953 patent explains that Figure 5 contains a graph showing a ski system that is able to “provide an attenuated release (represented by release envelope portion 504C) relative to the non-attenuated

release (represented by release envelope 504A).” Ex-1001, 7:2-9. The specification further states that Figure 2 is a graph “for a conventional *toe* release type binding” (Ex-1001, 7:10-12), and it is seen that the release envelope of the non-attenuated release of Figure 5 is “nearly identical” to the conventional toe release type binding of Figure 2 because they are one in the same.

151. The ’953 patent’s non-attenuated release is a “conventional toe release type binding,” and the ’953 patent purportedly adds an attenuated release, as a secondary *toe* release, to release at lower release torque thresholds.

J. The At Least 20% Term (Claim 54)

152. Dependent claim 54 recites “wherein said first release is at least 20% less than said second release,” the “at least 20%” term.

153. I understand that the parties have proposed the following constructions for this term:

Claim Term Requiring Construction	VSD’s Proposed Construction	Head’s Proposed Construction
said first release is at least 20% less than said second release	The tibial axis torque at the first release is at least 20% less than the tibial axis torque at the second release	Indefinite under § 112

154. Based on my review of the claims, specification, and prosecution history of the '953 patent, it is my opinion that a POSITA would not be informed, with reasonable certainty, as to how to calculate whether a first release is at least 20% less than a second release. Thus, a POSITA cannot reasonably determine the claim scope and the "at least 20%" limitation is indefinite.

155. Because the '953 patent does not provide sufficient guidance to instruct a POSITA how to calculate the first release compared to the second release, a POSITA would need to perform undue experimentation to be able to determine if the first release is at least 20% less than the second release, if they could do so at all.

156. For instance, the '953 patent specification provides a graph of the "% Recommended Release Torque at Tibial Axis vs. Load Position," but it does not sufficiently explain how this graph was created or how to achieve the 20%-50% attenuation of line 504C compared to line 504A. Ex-1001, Fig. 5. The '953 patent specification also vaguely references a "computer model for a ski binding with selective release characteristics" that the named inventors used to "shape the release envelope to accommodate the retention requirements of skiers so that a narrow but predictable margin of retention is provided in the area of the envelope associated with the most common mechanism of ACL injury" (Ex-1001, 4:31-49), but the specification does not provide information for a POSITA to understand

how the computer model was generated, what it entails, how it was used, or how it is providing the resulting values.

157. What's more, I understand that different claim terms have to have different meanings. Therefore, I understand that when claim 54 requires "wherein said first release is at least 20% less than said second release," (Ex-1001, claim 54) it must mean that the first release and second release is something broader than dependent claim 55, which requires "wherein *said first release is a first release torque about a tibial axis* of a skier when the skier is wearing the ski boot and the ski boot is secured to the ski by said ski binding assembly *and said second release is a second release torque about a tibial axis of a skier* when the skier is wearing the ski boot and the ski boot is secured to the ski by said ski binding assembly." Ex-1001, claim 55 (emphasis added). But the patent's specification does not explain what the first or second release is if not a first or second release torque about a tibial axis of a skier when the skier is wearing the ski boot and the ski boot is secured to the ski by the ski binding assembly.

158. In my opinion, given the lack of examples or direction in the specification, along with the complexities of choosing the right algorithms or equations for the specific application, an undue amount of experimentation would be required to arrive at the "at least 20% less" element.

K. Defined Level and Sense Terms (Claim 58)

159. Independent claim 58 recites the defined level and defined sense terms.

160. I understand that the parties have proposed the following constructions for these terms:

Claim Term Requiring Construction	VSD's Proposed Construction	Head's Proposed Construction
exceeds a first defined level and has a first defined sense	“Exceeds” means greater than (plain meaning) “first defined level” is a magnitude of the first loading corresponding to a release setting of the binding at the defined release condition “first defined sense” is the direction of the first loading corresponding to a release setting of the binding at the defined release condition	Indefinite under § 112
exceeds a second defined level and has a second defined sense	“Exceeds” means greater than “second defined level” is a magnitude of the second loading corresponding to a release setting of the binding at the defined release condition “second defined sense” is the direction of the second loading corresponding to a release	Indefinite under § 112

	setting of the binding at the defined release condition	
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161. Based on my review, none of the claims, specification, or prosecution history of the '953 patent provide objective boundaries for what a defined level is or what a defined sense is. POSITAs could come to different conclusions regarding the defined level or defined sense and therefore be uncertain of the bounds of the claim and whether or not there is infringement. There is no objective boundary for what “defined” is. How is a POSITA supposed to know what level this is set to or which direction the defined sense is supposed to be?

162. The intrinsic record does not provide any objective definition identifying a standard for determining when the defined level has been reached or when the defined sense is achieved. In the absence of a workable objective standard, “defined level” and “defined sense” are completely dependent on a POSITA’s subjective opinion. I understand that the scope of claim language cannot depend solely on the unrestrained, subjective opinion of a particular individual purportedly practicing the invention.

163. These problems are amplified when considering VSD’s proposed construction. VSD proposes that a defined level “is a magnitude of the [first/second] loading corresponding to a release setting of the binding at the

defined release condition.” This again is a subjective determination because it ties the required level to the release setting of the binding at what VSD refers to as a “defined release condition.” But “defined release condition” is not a defined term, and the intrinsic record again fails to inform a POSITA about an objective standard for release condition. As above, VSD contends that a release condition is “predetermined external loading of the ski correlated to an estimated skier tibial axis load level selected to lessen the likelihood of ACL injury.” But there is no way for a POSITA to determine what this “predetermined external loading” will be. VSD appears to correlate the predetermined external loading to “an estimated skier tibial axis load level selected to lessen the likelihood of ACL injury.” But ACL injuries happen at different levels for different skiers and rely on numerous factors. The intrinsic record does not provide information for how a POSITA is to determine a universal estimated skier tibial axis load or how to determine the predetermined external load for each skier. These numbers are subjective.

VIII. CONCLUSION

164. I reserve the right to submit additional materials and opinions consistent with my opinions expressed herein. I also reserve the right to author further reports in accordance with the case and the Court's Discovery Schedule/Order, such as an expert report and/or testimony responsive to VSD's expert report addressing the claim terms of the '953 patent.

165. I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Date: June 13, 2024

By: Maury L. Hull
Dr. Maury Hull