Trials@uspto.gov
571.272.7822

Paper 34
Date: September 18, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ORTHOCISION, INC.,
Petitioner,

v.

PTL OPCO LLC,[1]
Patent Owner.

IPR2023-00625
Patent 11,020,129 B2

Before MICHAEL L. WOODS, RYAN H. FLAX, and MICHAEL A. VALEK, *Administrative Patent Judges*.

FLAX, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
35 U.S.C. § 318(a)

[1] A change in caption (*compare* Institution Decision ("DI"), Paper 10) results from Patent Owner's indicated change of ownership of the challenged patent. Paper 9, 1.

I. INTRODUCTION

PTL Opco LLC ("Patent Owner") is the owner of U.S. Patent 11,020,129 B2 ("the '129 patent"). Paper 9, 1. On February 22, 2023, Orthocision, Inc. ("Petitioner") filed a Petition for *inter partes* review challenging the patentability of claims 1, 2, 9, and 10 of the '129 patent (claims 3–8 and 11–16 are not challenged). Paper 3, 1, 3, 51–85 ("Pet."). Trial was instituted on September 20, 2023. DI.

On December 22, 2023, Patent Owner filed a Response to the Petition. Paper 16 ("Resp."). Petitioner followed this with a Reply on March 29, 2024 (Paper 19, "Reply"), to which Patent Owner responded on May 31, 2024, by filing a Sur-reply (Paper 26, "Sur-reply").

Oral argument was heard at a final hearing held July 1, 2024. A transcript of this hearing is entered in the record. Paper 33 ("Hr'g Tr.").

Petitioner bears the burden of proving unpatentability of the challenged claims, and the burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must prove unpatentability by a preponderance of the evidence. *See* 35 U.S.C. § 316(e) (2018); 37 C.F.R. § 42.1(d) (2019).

After considering the parties' arguments and supporting evidence, as discussed in detail below, we conclude that Petitioner has not proved that any challenged claim of the '129 patent is unpatentable. Our reasoning is discussed below, but to summarize, Petitioner fails to supply sufficient reasoning and evidence concerning how the asserted prior art should be combined to achieve the features and steps recited by the claims. Too much is asked of the imagination of the Board to fill in the gaps in the Petition's

assertions, undermining the persuasiveness of the limited reasoning Petitioner offers to explain why one of ordinary skill in the art would have been motivated to combine the references and how such an ordinarily skilled artisan would have done so with a reasonable expectation of success.

A. REAL PARTIES-IN-INTEREST

Petitioner identifies "Orthocision, Inc., the patent owner, PainTEQ, LLC, and Omnia Medical, LLC," as real parties-in-interest. Pet. 1.

Patent Owner identifies the real parties-in-interest, as follows:

> Pain TEQ, LLC, a Florida limited liability company, which [was originally] listed as the real party-in-interest, assigned its rights in the U.S. Patent No. 11,020,129 ("'129 Patent") to PTL Holdco LLC, a Delaware limited liability company, which then assigned its rights in the '129 Patent to PTL Opco LLC, a Delaware limited liability company. Thus, PTL Opco LLC is the current owner of the '129 Patent and should be added as a real party-in-interest in this *inter partes* review. Pain TEQ, LLC licensed the '129 Patent from the PTL Opco LLC and therefore continues to be a real party-in-interest.

Paper 9, 1.

B. RELATED MATTERS

Each party indicates there are no other matters related to this proceeding. Pet. 1; Paper 5, 1; Paper 25, 1; Paper 28, 1. However, Patent Owner also states, "U.S. Patent Application No. 18/514,814 is a related family application of the '129 Patent that both claim priority to U.S. Provisional Patent Application No. 62/910,913 and share the same subject matter," and "[w]hile not a continuation of the '129 patent, Patent Owner files this updated Mandatory Notice to establish the relationship between the '814 Application and the '129 Patent pursuant to the Board[']s email on May 30, 2024." Paper 25, 1; *see also* Paper 28, 1.

C. THE '129 PATENT

The '129 patent issued on June 1, 2021, from U.S. Application 17,063,613, which was filed on October 5, 2020. Ex. 1001, codes (45), (21), (22). The '129 patent indicates priority as a continuation-in-part to U.S. Application 16/851,840, filed on April 17, 2020, and to U.S. Provisional Application 62/910,913, filed on October 4, 2019. *Id.* at codes (60), (63), 1:7–15. Petitioner notes the '129 patent's indications as to priority and does not dispute that the '129 patent should be accorded priority to the above-identified provisional application. Pet. 14–15, 25, 28, 33, 39, 42–43, 46, 48.

The '129 patent's abstract states:

> An [*sic*] method for installing a fusion implant into a sacroiliac joint ("SI Joint") without the use of a rotary cutting instrument. The method incorporates a multimodal abrading device having abrading surfaces on opposing sides and an open tip comprising a cutting edge. The method includes the step of using the abrading head to cut bone tissue from the SI Joint at an insertion point while simultaneously using the abrading surfaces to decorticate the cortical bone at the insertion point.

Ex. 1001, Abstract.

As Background, the '129 patent provides some explanation of the relevant anatomy, as follows:

> The sacroiliac joint ("SI Joint") is located at the interface between the sacrum and ilium bones in a human's pelvic area. The SI Joint includes strong ligaments that permit only slight movement between the sacrum and the ilium. The sacrum is connected to the base of the spine, and each ilium is connected to the top of the leg and hip area. Thus, the SI Joint is the interface between a human's upper body and lower body.

Id. at 1:28–35.

Figure 1, reproduced below, illustrates a human pelvis:

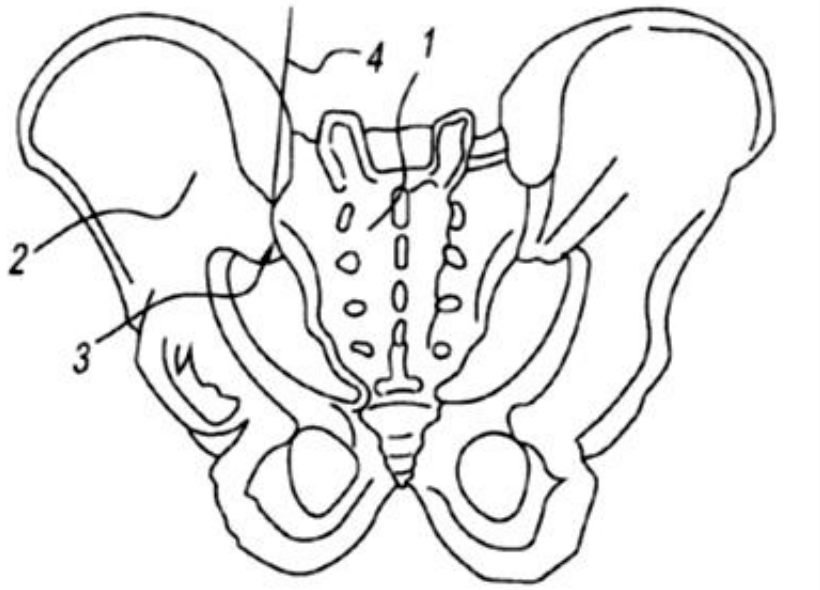


FIG. 1

Id. at Fig. 1. The '129 patent explains that Figure 1 shows a "posterior view of a typical human pelvis," and, more specifically, the pelvis's sacrum 1, ilium 2, and SI joint 3 where the sacrum and ilium abut at a joint plane. *Id.* at 3:13, 4:37–42. Figure 1 also shows a "K-wire" as element 4, which is not a natural part of the anatomy, but is described in the '129 patent as a medical device that may be used in the methods of the invention for locating and accessing the SI joint. *See id. passim*.

The '129 patent focuses on a system and a tool for preparing an SI joint for an allograft implant (implant shown as element 5 in Figure 2) that are intended to overcome problems in the field such as procedural complexity, the time consuming nature of the procedure, the need for a drill or other rotary cutting instrument, and the need for additional tools like a slap/slide hammer. *Id.* at 1:36–2:6. The '129 patent states, "[t]he present set of instruments seeks to overcome these problems by providing a slide

hammer integrated into the abrading device in a single tool, which eliminates the need for using a rotary cutting instrument in the bone of the SI Joint to form a pilot hole for the implant." *Id.* at 2:7–11.

The '129 patent describes several embodiments of such a tool; an illustrative example is shown in Figure 21, reproduced below:

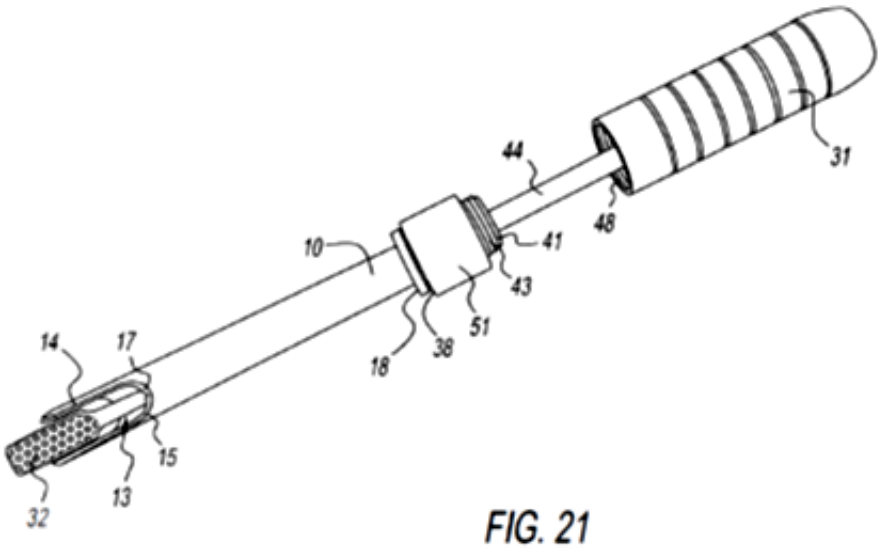


FIG. 21

Figure 21 (which combines elements also illustrated in Figures 4 and 13) shows a system having an abrading device fully inserted into a working channel, and a slide hammer in an extended position. *Id.* at 3:55–56. As shown above, the system includes working channel 10 having arms 13 and 14 and iliac contour 15 on the plane facing out of the page (on the other side is sacral contour 16, not shown). *Id.* at 4:49–5:21. In use, working channel 10 is inserted into, and seats in and against, the SI joint, with iliac contour 15 against the ilium and sacral contour 16 against the sacrum, and provides access for instruments to the SI joint. *Id.* Working channel 10 is shown having channel collar 18 for receiving mating components. *Id.* at 5:27–29.

Further shown above, inside working channel 10 is abrading device 30 (not numbered in this figure), which has abrading head 32 at its distal end.

Also shown above is slap hammer assembly 40 (number not shown in figure), which has base 51, hammer sleeve 31, and shaft 44. *Id.* at 6:66–7:5. The '129 patent describes that slap hammer assembly 40 has "a releasing means that releasably connects a hammer sleeve 31 to the base 51" and that "[t]he released hammer sleeve 31 is configured for sliding engagement along the shaft 44." *Id.* at 7:1–5. The '129 patent further describes that

> The releasing means is any means for releasably connecting the hammer sleeve 31 to the base 51, thereby transitioning the slide hammer assembly between its released position and its locked position. The releasing means could be a mating threaded connection, a quick disconnect attachment, a depressible tab, a latch, a clasp, a clip, a clamp, or other equivalent connection structure.

Id. at 7:5–12. Regarding the embodiment of Figure 21, the releasing means is described and illustrated as external threads 43 and threaded connector 48, respectively, on collar 41 and hammer sleeve 31. *Id.* at 7:13–48.

Abrading device 30 is described as having abrading head 32, which "is a rasp, broach, or other abrading tool that is used to grate, abrade, or otherwise decorticate the cortical bone inside the SI Joint 3." *Id.* at 6:14–18. An embodiment of an abrading head 32 is illustrated in Figure 14, reproduced below:

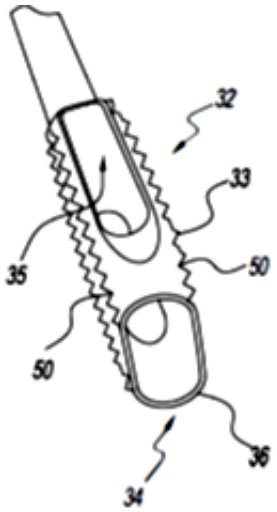


FIG. 14

The abrading head 32 embodiment shown in Figure 14 is depicted as a "generally rectangular" end/distal portion of abrading device 30 (reference number not shown) having abrading surfaces 33 and lateral sides 35, and being an open tip 34. *Id.* at 6:19–25. More specifically, in this embodiment,

> The open tip 34 comprises a cutting edge 36 around all or part of the leading edge of the open tip 34, the cutting edge 36 configured for cutting bone tissue inside the SI Joint 3, such as the sacrum 1 or ilium 2. The abrading surfaces 33 and lateral sides 35 form a box-like abrading head 32 having a void therein. The openings in the lateral sides 35 enable lateral ingress into and egress from the void. For example, as the cutting edge 36 cuts bone tissue inside the SI Joint 3, the dislodged bone tissue falls into the void and may exit the abrading head 32 via the openings in the lateral sides 35.

Id. at 6:28–38.

To summarize, the '129 patent describes a system used in the following general steps: working channel 10 (combined with joint locator 20 in its channel 13—*see id.* at Figs. 5, 11) is physically advanced into the SI

joint (at insertion end 11) until iliac contour 15 abuts the ilium and sacral contour 16 abuts the sacrum, where arms 14 of working channel 10 maintain alignment (joint locator 20 is removed); abrading device 30 is inserted through working channel 10 at working end 12 to make contact with the SI joint, forced thereinto with a mallet if necessary, so cutting edge 36 cuts the relevant bone of the sacrum and ilium and abrading surfaces 33 decorticate the cortical bone in the SI joint to form a decorticated implant void (no drill or pilot hole is needed); abrading device 30 is then worked in and out of working channel 30 to further abrade/decorticate the sacrum and ilium in the SI joint; if abrading head 32 becomes lodged in the SI joint, slide hammer assembly 40 is enabled to remove it (without the need to apply any counter pressure to the patient); finally, after removing abrading device 30, an implant can be advanced through working channel 10 for installation into the SI joint. *Id.* at 9:28–10:56.

The '129 patent has 16 claims, with claim 1 the sole independent claim; it is illustrative and reproduced below. Ex. 1001, 12:49–14:65.

> 1. A method of forming an implant void in a sacroiliac joint without the use of a rotary cutting instrument, the method comprising the steps of:
>
> **[1(a)]** locating an insertion point in the sacroiliac joint, the insertion point defining an intended location for the implant void;
>
> **[1(b)]** introducing a working channel into the insertion point, the working channel having an insertion end and a working end, the insertion end of the working channel further comprising a first iliac contour, a first sacral contour, and insertion arms;
>
> **[1(c)]** inserting the insertion arms into the sacroiliac joint at the insertion point such that the first sacral contour is seated

against a sacrum bone and the first iliac contour is seated against an ilium;

[1(d)] introducing an abrading device into the working channel, the abrading device comprising:

[1(d)(i)] an abrading head at a distal end of the abrading device, the abrading head having:

[1(d)(i)(a)] abrading surfaces on each of a first pair of opposing sides, the abrading surfaces comprising one or more teeth, barbs, blades, ridges, slots, broaches, or other members capable of abrading a cortical bone of the sacroiliac joint; and

[1(d)(i)(b)] an open tip comprising a cutting edge disposed at a leading edge of the open tip, the cutting edge configured to cut bone tissue in the sacroiliac joint; and

[1(d)(i)(c)] a slide hammer assembly at a proximal end of the abrading device, the slide hammer assembly having a released position that enables operation of the slide hammer assembly, a locked position that prohibits operation of the slide hammer assembly, and a releasing means for transitioning the slide hammer assembly between the locked position and the released position; and

[1(e)] advancing the abrading device into the sacroiliac joint such that the open tip cuts bone tissue away from the sacrum or the ilium and the abrading surfaces decorticate the cortical bone inside the sacroiliac joint, thereby forming a decorticated implant void at the insertion point without using a rotary cutting instrument.

Ex. 1001, 12:49–13:23 (adding sub-numbering as used by Petitioner).

Dependent claim 2 (depends directly from claim 1) adds, *inter alia*, the step of unlocking the recited slide hammer and using it to dislodge the recited abrading head from the SI joint. *Id.* at 13:24–28. Dependent claim 9

(depends directly from claim 1) adds, *inter alia*, that the recited void created by the recited decorticating of claim 1 is generally rectangular (in cross section) and adapted to receive a fusion implant that is generally rectangular (in cross section). *Id.* at 14:9–14. Dependent claim 10 depends from claim 9 and is otherwise the same as claim 2. *Id.* at 14:15–19.

D. ASSERTED GROUNDS FOR UNPATENTABILITY

Petitioner asserts the following grounds for the unpatentability of claims 1, 2, 9, and 10 of the '129 patent:

Ground	Claims Challenged	35 U.S.C. §[2]	Reference(s)/Basis
1	1, 2, 9, 10	103	Compton,[3] Donner,[4] Otte,[5] Sharma[6]
2	1, 2, 9, 10	103	Schifano,[7] Compton, Martz,[8] Sharma
3	1, 2, 9, 10	103	Compton, Martz, Sharma
4	1, 2, 9, 10	103	Black,[9] Martz, Sharma
5	1, 2, 9, 10	103	Black, Donner, Martz, Sharma

See Pet. 3.

[2] The '129 patent has an indicated and unopposed priority date of October 4, 2019, which is after the AIA revisions to 35 U.S.C. § 103 took effect on March 16, 2013. 35 U.S.C. § 100 (note). Therefore, AIA § 103 applies.

[3] U.S. Patent 10,219,841 B1, issued Mar. 5, 2019 (Ex. 1004, "Compton").

[4] US 2018/0036017 A1, published Feb. 8, 2018 (Ex. 1006, "Donner").

[5] US 2005/0080422 A1, published Apr. 14, 2005 (Ex. 1007, "Otte").

[6] WO 2014/091454 A1, published June 19, 2014 (Ex. 1009, "Sharma").

[7] U.S. Patent 11,083,511 B2, issued Aug. 10, 2021 (Ex. 1003, "Schifano").

[8] US 2005/0090829 A1, published Apr. 28, 2005 (Ex. 1008, "Martz").

[9] US 2016/0310197 A1, published Oct. 27, 2016 (Ex. 1005, "Black").

In support of these grounds for unpatentability, Petitioner submits, *inter alia*, a First and a Second Declaration of Troy D. Drewry. Ex. 1017; Ex. 1022. In support of its positions, Patent Owner submits a First and a Second Declaration of Christopher J. Bovinet, MD. Ex. 2001; Ex. 2005. On the record presented, we find Mr. Drewry and Dr. Bovinet competent to testify on the subject matter of their declarations. *See infra* Section II.A; *see* Ex. 1017 ¶¶ 3–4, 6–10, 15–19, 29–36; Ex. 1018; Ex. 2001 ¶¶ 8–15, 19; Ex. 1022; Ex. 2002; Ex. 2005. Each witness was deposed and the transcripts of their depositions are in the record. Ex. 1021; Ex. 2004; Ex. 2006.

II. DISCUSSION

A. LEVEL OF ORDINARY SKILL IN THE ART

In determining the level of ordinary skill in the art, we consider the types of problems encountered in the art, the prior art solutions to those problems, the rapidity with which innovations are made, the sophistication of the technology, and the educational level of active workers in the field. *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986).

Petitioner asserts:

> A POSITA is a person possessing at least (1) a Bachelor of Science in Mechanical, Biomechanical or Biomedical engineering, or a related field of science, as well as at least three years of experience in the field of orthopedic implants or would be a practicing spinal orthopedic surgeon with at least 3 years of experience and at least some experience in the design and/or use of spinal orthopedic implants. (Ex.1017, ¶19.)

Pet. 16 (Petitioner uses the acronym POSITA to refer to the person of ordinary skill in the art).

Patent Owner does not specifically address Petitioner's proposed definition. *See generally* Resp. Patent Owner's witness, Dr. Bovinet, uses a slightly different, but not materially so, definition of the ordinarily skilled artisan than Petitioner. *See* Ex. 2005 ¶ 13. Thus, the parties appear to agree on who the person of ordinary skill in the art would have been in terms of education and field of work experience.

We accept and adopt Petitioner's proposed definition of the person of ordinary skill in the art (or ordinarily skilled artisan), which appears to be consistent with the level of skill in the art reflected in the prior art of record and the disclosure of the '129 patent. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) ("the prior art itself [may] reflect[]" evidence of the ordinary level of skill in the art) (quoting *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 163 (Fed. Cir. 1985)).

B. CLAIM CONSTRUCTION

We construed certain claim language in our Institution Decision: "open tip" and "releasing means for transitioning the slide hammer assembly between the locked position and the released position" (herein, we shorten this latter term to "releasing means . . ."). DI 14–25. The parties presented initial arguments on the meaning of these terms in the Petition and Preliminary Response, which we considered. Pet. 19–20; Prelim. Resp. 7–19. The parties also present new arguments at trial concerning the interpretation of these claim terms, which we have considered. Resp. 4–20; Reply 1–10. The parties' new arguments, however, do not persuade us that our original interpretations of these claim terms were incorrect, and we maintain those interpretations in this Decision.

The Board interprets claim terms in an *inter partes* review using the same claim construction standard that is used to construe claims in a civil action in federal district court. 37 C.F.R. § 42.100(b). In construing claims, district courts and the Board here, by default, give claim terms their ordinary and customary meaning, which is "the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc).

When claim terms require express construction, sources for claim interpretation include "the words of the claims themselves, the remainder of the specification, the prosecution history [i.e., the intrinsic evidence], and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art."[10] *Id.* at 1314 (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004)). "[T]he claims themselves [may] provide substantial guidance as to the meaning of particular claim terms." *Id.* However, the claims "do not stand alone," but are part of "'a fully integrated written instrument' . . . consisting principally of a specification that concludes with the claims," and, therefore, the claims are "read in view of the specification." *Id.* at 1315 (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 978–79 (Fed. Cir. 1995) (en banc)). Any special definition for a claim term must be set forth in the specification "with reasonable clarity, deliberateness, and precision." *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). Without

[10] Neither party mentioned nor cited the '129 patent's prosecution history, of record as Ex. 1002, regarding the meaning of any claim language. *See generally* Pet.; Prelim. Resp.; Resp.; Reply; Sur-reply. Our own review of the prosecution history does not reveal anything that informs the construction of "open tip" or "releasing means . . . ." Ex. 1002.

such a special definition, however, limitations may not be read from the specification into the claims. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

"[W]e need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy.'" *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Petitioner initially proposed interpretations for the claim terms: "working channel" (of claim 1), "working end" (of claim 1), "a first iliac contour" (of claim 1), "a first sacral contour" (of claim 1), "insertion arms" (of claim 1), "abrading head" (of claims 1, 2, and 10), "open tip" (of claim 1), "decorticated implant void" (of claims 1 and 9), "releasing means . . ." (of claims 1, 2, and 10), "without using a rotary instrument" (of claim 1), and "lodged inside the sacroiliac joint" (of claims 2 and 10). Pet. 18–20. Petitioner provides support for its proposed interpretations in the form of cited quotes from the '129 patent's written description, but does not provide any further rationale or explanation for its proposed constructions. *Id.*

Patent Owner initially proposed interpretations for the two claim terms "open tip" (of claim 1) and "releasing means . . ." (of claims 1, 2, and 10). Prelim. Resp. 8–19. Patent Owner initially provided substantial argument addressing its rationale for each initially proposed claim construction, and did not dispute or offer an alternative interpretation for any other claim terms. *Id.* At trial, Patent Owner generally accepted our constructions (in our Institution Decision) of the claim terms "open tip" and

"releasing means . . . ," but argued that we should *supplement* our interpretations of these terms to further narrow the claims. Resp. 4–20.

Petitioner's Reply discusses the meaning of only claim terms "open tip" and "releasing means . . . ." Reply 1–10. No other terms are in dispute.

We address the disputed terms below.

1. "open tip"

The term "open tip" is found in independent claim 1. Ex. 1001, 13:6–9. For context, an "open tip" is recited as being one of several components of the recited "abrading device" that, in the claimed method, is introduced into the working channel and advanced into the SI joint so that the open tip cuts bone tissue. *Id.* at 12:49–13:23. The full text of the pertinent limitations of claim 1 are:

> introducing an abrading device into the working channel, the abrading device comprising:
>
> > an abrading head at a distal end of the abrading device, the abrading head having:
> >
> > > . . . an ***open tip*** comprising a cutting edge disposed at a leading edge of the ***open tip***, the cutting edge configured to cut bone tissue in the sacroiliac joint . . .
>
> [and]
>
> advancing the abrading device into the sacroiliac joint such that ***the open tip cuts bone tissue away from the sacrum or the ilium*** and the abrading surfaces decorticate the cortical bone inside the sacroiliac joint, thereby forming a decorticated implant void at the insertion point without using a rotary cutting instrument.

Id. (emphasis added to highlight claim term).

Petitioner initially asserted that "open tip" means *a structure on the abrading head having an exposed tapered edge*, and as support supplies the

following quote from the written description of the '129 patent: "The open tip 34 comprises a cutting edge 36 around all or part of the leading edge of the open tip 34, the cutting edge 36 configured for cutting bone tissue inside the SI Joint 3." Pet. 19 (citing Ex 1001, 6:28–30; Fig. 14).

Now, at trial, Petitioner argues that our construction upon institution unnecessarily imports the concept of an "interior void" into the meaning of "open tip," which Petitioner now argues is "comprehensible without an 'interior void.'" Reply 1. Petitioner argues that, although nothing of the sort is disclosed in the '129 patent, the element "open tip" might include "a wedge structure behind the open tip that diverts bone tissue from the cutting edge." *Id.* at 2. "Petitioner offers an alternative construction of open tip consistent with its recited function: *an open cutting edge that allows the passage of bone tissue during the advancement of the abrading head*." *Id.* Petitioner offers no evidence directly supporting its alternative construction. *See id.*

Patent Owner initially asserted that "open tip" means *a distal end of the abrading head whose leading edge encloses an opening thereinto*. Prelim. Resp. 8–10. Now, at trial, Patent Owner states "the Board should supplement its construction of this limitation to specify that the phrase 'the abrading head is *open* to an interior void' means that the abrading head has an 'opening' through which the dislodged tissue can enter the interior void. Ex. 2005 at ¶28." Resp. 4. And, "[f]urther, the Board's preliminary construction should be supplemented to specify that the phrase '*interior* void' means that the void is located on the *interior* of the abrading head—i.e., behind the exterior abrading surfaces (or between the interior surfaces of the first pair of the opposing sides). Ex. 2005 at ¶27." *Id.* at 4–5.

Considering the parties' original, and now modified, proposed interpretations, we again find Petitioner's unsupported. The '129 patent describes that:

> ***The open tip 34 comprises a cutting edge 36 around all or part of the leading edge*** of the open tip 34, the cutting edge 36 configured for cutting bone tissue inside the SI Joint 3, such as the sacrum 1 or ilium 2. The abrading surfaces 33 and lateral sides 35 ***form a box-like abrading head 32 having a void*** therein. The openings in the lateral sides 35 enable lateral ingress into and egress from the void. ***For example***, as the cutting edge 36 cuts bone tissue inside the SI Joint 3, the dislodged bone tissue falls into the void and may exit the abrading head 32 via the openings in the lateral sides 35.

Ex. 1001, 6:28–38 (emphasis added). However, the language of claim 1 is very clear on the functionality of the "open tip," expressly reciting that "the open tip cuts bone tissue away from the sacrum or the ilium." *Id.* at 13:19–20. Thus, the claim language itself provides the required functionality of the "open tip," and we do not agree with Petitioner that additional functionality relating to where bone tissue *might* go once cut, as discussed in the Specification, should be read into the claims as a limitation.

Patent Owner's newly proposed interpretation is similar to Petitioner's in that it requests addition of functionality discussed as an example in the Specification, but not recited in the claim's expressly recited functional language relating to the "open tip." We disagree with Patent Owner that the concept of dislodged tissue entering a void defined by the open tip is necessary to understanding the claim element.

And, once more, Patent Owner reads too much structure from the written description into the claim language as a limitation because it is not apparent that the recited "open tip" language requires that we further clarify

that any interior void defined by the open tip is on the interior of the abrading head, and behind the exterior abrading surfaces, or between interior surfaces of a first pair of opposing sides, as proposed by Patent Owner.

"[W]hile it is true that claims are to be interpreted *in light of* the specification . . . , it does not follow that limitations from the specification may be read into the claims. . . . [T]he claims define the invention." *Sjolund v. Musland*, 847 F.2d 1573, 1581–82 (Fed. Cir. 1988).

We maintain our initial construction of "open tip" as set forth in the Institution Decision. The claim terms "open" and "tip" and their combination, "open tip," are common words, used in their ordinary way, and are understandable on their face. And, what the '129 patent's written description makes clear is that the abrading head at the distal end of the invention's abrading device has a void (some empty space) and that the tip of the abrading head is open to that void. *See* Ex. 1001, 6:14–50. No more is required to understand this claim element.

Thus, we interpret the claim term "open tip," consistently with the intrinsic record, to mean that *the tip of the abrading head is open to an interior void of the abrading head*, which comports with the ordinary meaning of this claim language and the description of the '129 patent's Specification of an "open tip."

2. "releasing means for transitioning the slide hammer assembly between the locked position and the released position"

The term "releasing means . . ." is found in independent claim 1, claim 2, and claim 10. *Id.* at 13:10–17, 13:24–28, 1:15–19. For context, the full limitation reciting the "releasing means" element of claim 1 is:

> [A] slide hammer assembly at a proximal end of the abrading device, the slide hammer assembly having a released position

> that enables operation of the slide hammer assembly, a locked position that prohibits operation of the slide hammer assembly, and ***a releasing means for transitioning the slide hammer assembly between the locked position and the released position***.

Id. (emphasis added to highlight claim term).

A claim limitation is presumed to invoke 35 U.S.C. § 112(f) (or pre-AIA § 112 ¶ 6) if, as here, it explicitly uses the term "means" and includes functional language; this presumption is overcome if the limitation further includes the structure, material, or acts necessary to perform the recited function. *See Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015) (en banc).

Here, the word "means" is recited, followed by functional language, and the claim recites no structure associated with the means or function. Moreover, the parties agree that this is a means plus function limitation. *See* Pet. 19–20; Resp. 9. We find "releasing means" is a means plus function limitation and, based on the plain language of the claim, the recited "releasing means" is a part of the also recited "slide hammer assembly," as the above-quoted claim language defines. Ex. 1001, 13:10–17.

Construing a claim term under 35 U.S.C. § 112(f) involves two steps: (1) identifying the claimed function; and then (2) determining what structure, if any, disclosed in the Specification corresponds to the claimed function. *Williamson*, 792 F.3d at 1351. In conducting this analysis, we may not incorporate structure from the written description beyond that which is necessary to perform the claimed function. *See Micro Chemical, Inc. v. Great Plains Chemical Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999).

The function of this limitation is readily apparent in that the claim expressly recites the following: "*for transitioning the slide hammer assembly*

between the locked position and the released position." Ex. 1001, 13:15–17. Having identified the function under § 112(f), we turn to the corresponding structure.

Petitioner's initial position was that the corresponding structure was "[a] mating threaded connection, a quick disconnect attachment, a depressible tab, a latch, a clasp, a clip, a clamp or other equivalent connection structure," as these are the structures expressly listed in the written description. Pet. 19 (citing Ex. 1001, 7:9–12).

Patent Owner's initial position on the corresponding structure was that,

> the term "releasing means" should be construed as follows: "a mating threaded connection, a quick disconnect attachment, a depressible tab, a latch, a clasp, a clip, a clamp, or other equivalent connection structure releasably connecting the hammer sleeve to the base for transitioning the slide hammer assembly between the locked position and the released position."

Prelim. Resp. 16. As is apparent from comparing the parties' two original proposals, Patent Owner asserted that, in addition to the listed structures of Petitioner's proposal, the "releasing means" also included that such structures would connect the hammer sleeve to "the base." *Id.*

As in our Institution Decision, we again look to the '129 patent's written description where it addresses the invention's *releasing means* structure (both generally and with respect to an embodiment), which states:

> In one embodiment, the slide hammer assembly comprises ***a base connected to a shaft***, and ***a releasing means*** that ***releasably connects a hammer sleeve to the base***. The released hammer sleeve is configured for sliding engagement along the shaft. To operate the slide hammer assembly, the hammer ***sleeve*** is disengaged from the ***base***, placing the slide hammer

assembly in its ***released position***. This ***released position*** enables the hammer sleeve to slide freely along the shaft. . . .

[and]

Referring to FIGS. 16, 17, and 18, the abrading device 30 further comprises a slap hammer assembly, or slide hammer assembly 40. ***In one embodiment***, the slide hammer assembly 40 comprises ***a base 51 connected to a shaft 44***, and ***a releasing means that releasably connects a hammer sleeve 31 to the base 51***. The released hammer sleeve 31 is configured for sliding engagement along the shaft 44. ***The releasing means is any means for releasably connecting the hammer sleeve 31 to the base 51, thereby transitioning the slide hammer assembly between its released position and its locked position. The releasing means could be a mating threaded connection, a quick disconnect attachment, a depressible tab, a latch, a clasp, a clip, a clamp, or other equivalent connection structure.***

In one embodiment, shown in FIGS. 16, 17, and 18, ***the releasing means is a mating threaded connection***. This embodiment includes a collar 41 on the abrading device 30, a slide hammer shaft 44, and the hammer sleeve 31. The collar 41 comprises internal threads 42 and external threads 43. The shaft 44 comprises a threaded end 45 and a stop end 46. The hammer sleeve 31 has a threaded connector 48 and a hollow, cylindrical bore comprising an internal diaphragm 47 having a diaphragm opening 49 (see FIG. 18). The diaphragm opening 49 is sized to permit sliding passage of all parts of the shaft 44 except the stop end 46. The stop end 46 is sized too large to fit through the diaphragm opening 49.

To assemble the slide hammer assembly 40 of this embodiment, the threaded end 45 of the shaft 44 is inserted into the bore of the hammer sleeve 31, through the diaphragm 47 inside the hammer sleeve 31, and the threaded end 45 is threaded into, and mated with, the internal threads 42 of the collar 41. The threaded connector 48 in the hammer sleeve 31 is then mated to the external threads 43 on the collar 41 to promote a secure connection. The stop end 46 is disposed

> inside the bore of the hammer sleeve 31 on a side of the diaphragm 47 opposite that of the location of the threaded connector 48. ***In this configuration, shown in FIG. 20, the slide hammer assembly 40 is in its locked position***.
>
> To operate the slide hammer assembly 40, the threaded connector 48 is disengaged from the external threads 43 of the collar 41, ***placing the slide hammer assembly 40 in its released position***, which is shown in FIG. 21. This released position enables the hammer sleeve 31 to slide freely along the shaft 44. The hammer sleeve 31 is pulled until the diaphragm 47 inside the hammer sleeve 31 engages the stop end 46 of the shaft 44, thereby causing an impact that delivers the slide hammer force. ***Thus, the slide hammer assembly has a released position that enables operation of the slide hammer assembly, and a locked position that prohibits operation of the slide hammer assembly***.

Ex. 1001, 6:66–7:48 (emphasis added); *see also* DI 19–24.

Based on the Specification, particularly the above-quoted portion, we initially found, and here maintain, that the structure for the "releasing means" includes a variety of listed mechanisms that can lock and unlock the slide hammer for operation, including, "a mating threaded connection, a quick disconnect attachment, a depressible tab, a latch, a clasp, a clip, [or] a clamp." Ex. 1001, 6:66–7:48. This, as noted above, was (and remains) a point of agreement between the parties.

But, we also initially agreed (and still agree) with Patent Owner's original position that the Specification describes that for any such mechanism, it "releasably connects a hammer sleeve 31 to the base 51," and that "[t]he releasing means is any means for releasably connecting the hammer sleeve 31 to the base 51." *Id.*; *see also* Prelim. Resp. 12–16 ("the interface between the base and the distal end of the hammer sleeve is the only location specified in the '129 Patent for disposing the 'releasing

means.'") (citing Ex. 2001 ¶ 36). Thus, we determined at institution, and maintain here, that such a structural configuration must be part of the corresponding structure in interpreting this means-plus-function claim element: there is a sliding hammer sleeve and a base to which it may be locked and unlocked. *See Nomos Corp. v. Brainlab USA, Inc.*, 357 F.3d 1364, 1368–69 (Fed. Cir. 2004) (an identified corresponding structure must be limited to only that which is necessary to perform the recited function).

At institution, we asked: what is the "base" that is associated with the "releasing means" and hammer sleeve? DI 23. We noted at institution that no "base" is expressly recited by the claims, but in answering this question we found that the '129 patent describes that

> In one embodiment, the slide hammer 60 assembly comprises ***a base*** connected to a shaft, and ***a releasing means*** that releasably connects a hammer ***sleeve*** to ***the base***. The released hammer ***sleeve*** is configured for sliding engagement along the shaft. To operate the slide hammer assembly, the hammer ***sleeve*** is disengaged from ***the base***, placing the slide hammer assembly in its ***released position***.

Id. (quoting Ex. 1001, 2:59–66 (emphasis added)). In view of the Specification, we held at institution, and maintain now, that the base is a structure to which the sliding hammer sleeve is engaged when locked to prevent its movement.

The '129 patent illustrates an embodiment (at Figures 16, 17, and 21) where the base (element 51) is part of or directly connected to the proximal end of the abrading device (element 30), but this specific structural relationship is not described in the written description (nor is it expressly claimed), and the written description does not express that this is a required configuration, but rather calls it "one embodiment." *Id.* at 6:66–7:47. Thus,

we discerned no reason at institution, and we discern no reason now, to limit the structure of the "releasing means . . ." to this one preferred embodiment.

Upon instituting trial, we held that "releasing means . . ." was construed as follows: (1) the recited function is *for transitioning the slide hammer assembly between the locked position and the released position*; and (2) the corresponding structure is *a mating threaded connection, a quick disconnect attachment, a depressible tab, a latch, a clasp, a clip, or a clamp, releasably connecting a hammer sleeve to a base*, and equivalent structures. DI 24.

This interpretation differs little from the construction initially urged by Patent Owner, other than our substitution of "a" for "the" when introducing the hammer sleeve and base elements, and our reordering of the language to place the "equivalents" phrase at the end of the sentence to better comport with the statute's requirement that equivalents apply to the entire corresponding structure. *Williamson*, 792 F.3d at 1348 (identifying that the statute states that the limitation shall be interpreted to "cover the corresponding structure, material, or acts described in the specification and equivalents thereof." (quoting pre-AIA § 112 ¶ 6)).

In response to this claim construction, Petitioner now states "[t]he Board provided a correct construction of the structure of the 'releasing means.'" Reply 5.

However, even though we largely agreed with its original proposed construction, Patent Owner is unsatisfied. Patent Owner now argues: (1) "the Board should modify its preliminary construction of the limitation 'releasing means' to specify that the 'releasing' structures enumerated in the '129 [patent] must be disposed at *the interface of the base and the distal end*

of the hammer sleeve"; and (2) "the term 'base' should be construed as '*a structure that connects a proximal end of an abrading device to a distal end of a shaft of the slide hammer assembly*.'" Resp. 9–19.

We disagree with each of Patent Owner's proposed supplements to the construction of "releasing means . . ." in our Institution Decision and maintain our initial interpretation.

Patent Owner has consistently urged that we follow the Federal Circuit's decision in *Nomos*, in interpreting "releasing means . . . ." *See* Prelim. Resp. 16–19; Resp. 9–20. We agree that the facts of *Nomos* are highly analogous to those presented here and that this precedent applies. However, the Federal Circuit's analysis in *Nomos* supports that our original construction of "releasing means . . ." was correct.

In *Nomos*, the claimed invention (of Nomos's U.S. Patent 5,411,026 – "the '026 patent")[11] covered a system used in radiation therapy and included as a limitation, "a means for generating at least one ultrasound image of the lesion in the patient's body." *Nomos*, 357 F.3d at 1365. The Federal Circuit's decision focused on this means-plus-function limitation's interpretation. *Id.* at 1367–69.

Following the customary process for interpreting a means-plus-function limitation, after identifying that the undisputed function was "generating at least one ultrasound image of the lesion in the patient's body," as expressly recited in the claim, the Federal Circuit turned to how to properly identify the corresponding structure and whether, and to what extent, the specific structural arrangement of features disclosed as the sole

[11] The '026 patent is publicly available at https://patentcenter.uspto.gov/applications/08134168 (Patent Center).

embodiment in the Specification should be included as the corresponding structure. *Id.* at 1367–68. Specifically, the question was whether the corresponding structure was only an ultrasound probe, or an ultrasound probe and a fixation device securing that probe to a treatment table. *Id.*

On this, the Federal Circuit expressed that:

> While we are careful to limit the corresponding structure to only that which is necessary to perform the recited function, *Asyst Tech., Inc. v. Empak, Inc.*, 268 F.3d 1364, 1371 (Fed. Cir. 2001), we keep in mind that "a means clause does not cover *every means* for performing the specified function." *Laitram [Corp. v. Rexnord, Inc.]*, 939 F.2d [1533,] 1536 [(Fed. Cir. 1991)].

Id. at 1368.

The sole embodiment described in the Specification of the '026 patent includes a fixation device that secures the probe to the treatment table and the '026 patent consistently states that the probe is "disposed on" or "secured to" the treatment table, and includes other disclosure identifying that the probe is secured to the table. *See id.* (citing the '026 patent, 3:39–42, 7:6–10, 7:14–22, 10:48–52). In view of this, the Federal Circuit held, "[t]hus, it is clear from the written description that 'in order to generate ultrasound image' the ultrasound probe must be mounted to the treatment table by a fixation device," and "[i]n this case, only one embodiment is described in the '026 patent, therefore, the corresponding structure is limited to this embodiment and its equivalents," and finally construed the limitation as: "[a] fixation device is correctly understood as part of the corresponding structure of limitation (a) of claim 1." *Id.* at 1368–69.

However, the Federal Circuit did not limit that fixation device to the particular attachment mechanism or specific positioning disclosed in the

'026 patent's sole embodiment. That embodiment illustrates that ultrasound probe 422 is fixed to treatment table 404 by bracket 423 or fixation device 306 at a specific location: offset from the midpoint of the side of the treatment table. Ex. 3002, 3:40–42, 7:5–22, 10:48–52, Figs. 5, 12. This is illustrated by the '026 patent's Figure 5, reproduced below:

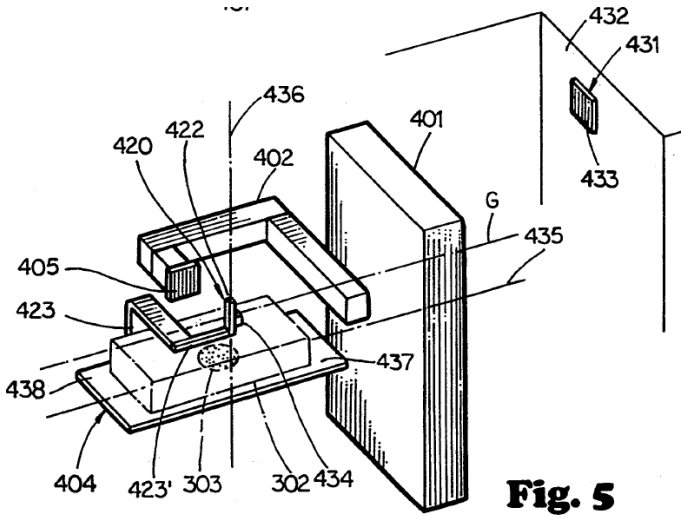


Fig. 5

The '026 patent's Figure 5 shows a system including, of relevance, treatment table 404, ultrasound probe 422 above table 404, and affixed thereto via bracket 423/423′, which joins table 404 at a position between the table's end and its midpoint along its side. Such specifics in the respective positioning of the treatment table, ultrasound probe, and fixation device, although important to it, were not part of the Federal Circuit's claim construction.

The facts here are similar. Certainly, the illustrated embodiment of the invention described in the '129 patent provides that the slide hammer is affixed to the proximal end of the abrading device by the base. *See, e.g.*, Ex. 1001, Figs. 16, 17, 21. This embodiment is illustrated as having a threaded connection between the slide hammer's sleeve and the base connecting it to the abrading device, which in that embodiment would be the

releasing means. *See id.* at 7:13–48. However, the '129 patent makes clear that the *releasing means* is not limited to his specific embodiment—the '129 patent includes a more extensive list of structures (cited by each party) than the treaded connection that can provide the connection between the hammer sleeve and base, and also more generally describes the relationship between the hammer sleeve and base (as we have noted in this Section, above). *Id.* at 2:59–67, 7:1–12.

Therefore, like the Federal Circuit in *Nomos*, we will not read into the disputed means-plus-function limitation more features for the corresponding structure than are necessary for performance of the function simply because the patent only illustrates one preferred configuration. For this reason, we reject Patent Owner's attempt to further restrict the structure and positioning of the base through its proposed construction of "releasing means." Resp. 9–19.

To summarize, "releasing means . . ." is construed as follows: (1) the recited function is *for transitioning the slide hammer assembly between the locked position and the released position*; and (2) the corresponding structure is *a mating threaded connection, a quick disconnect attachment, a depressible tab, a latch, a clasp, a clip, or a clamp, releasably connecting a hammer sleeve to a base,* and equivalent structures.

3. Summary on Claim Construction

We maintain our earlier constructions of "open tip" and "releasing means . . . ." *See* DI 16–24. We determine that no other express construction of any claim term is necessary for purposes of rendering this Decision. *See Nidec Motor Corp.*, 868 F.3d at 1017.

Although we maintain here our constructions of "open tip" and "releasing means . . . ," we do so only for the sake of completeness. These claim constructions, ultimately, are not determinative of the outcome of this proceeding because, regardless of the meaning of any claim term, including these disputed terms, we find that Petitioner fails to adequately explain why any claim would have been obvious under the asserted grounds. We explain this in detail below.

C. LEGAL STANDARDS FOR ANALYZING PATENTABILITY

"In an IPR, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (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 ultimate burden never shifts to Patent Owner. *See Dynamic Drinkware*, 800 F.3d at 1378 (discussing the burden of proof in *inter partes* review).

Regarding obviousness, the Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), reaffirmed the framework for determining obviousness set forth in *Graham v. John Deere Co.*, 383 U.S. 1 (1966). In *KSR*, the Court summarized the four factual inquiries set forth in *Graham* (383 U.S. at 17–18) that are applied in determining whether a claim is unpatentable as obvious under 35 U.S.C. § 103 as follows: (1) determining the scope and content of the prior art; (2) ascertaining the differences between the prior art and the claims at issue; (3) resolving the level of

ordinary skill in the art;[12] and (4) considering objective evidence indicating obviousness or non-obviousness.[13] *KSR*, 550 U.S. at 406.

"The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.* at 416. "[W]hen the question is whether a patent claiming the combination of elements of prior art is obvious," the answer depends on "whether the improvement is more than the predictable use of prior art elements according to their established functions." *Id.* at 417.

> The motivation-to-combine analysis is a flexible one. "*[A]ny* need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed," but the "analysis 'need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.'"

Intel Corp. v. PACT XXP Schweiz AG, 61 F.4th 1373, 1379–80 (Fed. Cir. 2023) (quoting *KSR*, 550 U.S. at 418, 420 (emphasis added)). "[I]f there's a known technique to address a known problem using 'prior art elements according to their established functions,' then there is a motivation to combine," because *KSR* explains that "if a technique has been used to improve one device [or method], and a person of ordinary skill in the art would recognize that it would improve similar devices [or methods] in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *Id.* at 1380 (quoting *KSR*, 550 U.S. at 417; and

[12] *See supra* Section II.A.

[13] There is no asserted evidence pertaining to objective indicia of non-obviousness. *See* Resp.

Intel Corp. v. Qualcomm Inc., 21 F.4th 784, 797 (Fed. Cir. 2021)). If addressing a known problem, the prior art combination need not be "the *best* option, only . . . a *suitable* option." *Id.* (quoting *Intel*, 21 F.4th at 800 (emphasis original)).

With these standards in mind, we address Petitioner's challenges.

D. PETITIONER'S ASSERTED PRIOR ART

We summarize the disclosures of Petitioner's asserted prior art below. There is no dispute that each asserted reference is prior art. *See generally* Resp.

1. Schifano (Ex. 1003)

Schifano issued as U.S. Patent 11,083,511 B2 on August 10, 2021, from U.S. Application 16/718,189, which was filed on December 18, 2019, and it indicates priority to March 25, 2015, via a continuation application, and to March 15, 2013, via a continuation-in-part application. Ex. 1003, codes (10), (45), (21), (22), (63).

Schifano's Abstract states:

> An improved method of fusing the sacroiliac joint and tools for accomplishing the same is disclosed. In one embodiment, the present invention is a method that uses an intra articular joint fusion device for connecting the sacrum and ilium that includes creating a first incision in the patient's skin proximal to the patient's sacroiliac joint, inserting a surgical channel tool into the incision from the patient's posterior, creating a void in the sacroiliac joint, inserting a fusion implant into the void, the fusion implant having at least one fixation element for engagement with bone tissue in the articular surfaces of the sacrum and the ilium, and driving the fusion implant into the void such that the at least one fixation element engages with bone tissue in an articular surface of at least one of the sacrum

> and ilium, and the fusion implant fixes relative positions of the sacrum and ilium.

Ex. 1003, Abstract.

A channel tool, as mentioned in Schifano's Abstract, is illustrated in its Figure 30, reproduced below:

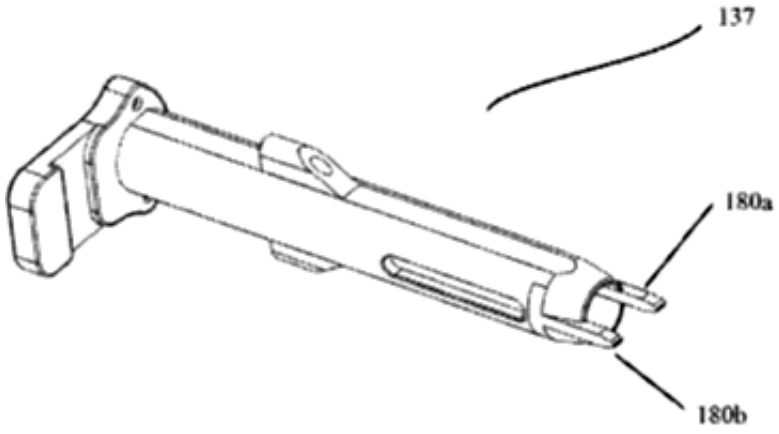


Figure 30 "is a perspective view of a surgical tool according to an embodiment of the [Schifano] invention" and it shows exposure device 137, which Schifano discloses has a hollow barrel working channel 239 (not numbered in Figure 30) for passing various surgical tools into the SI joint, and that exposure device 137 "may be engaged with a posterior side of the sacroiliac joint." *Id.* at 6:43–44, 13:51–60. Schifano discloses that insertable end 142 (not numbered in Figure 30) of working channel 239 may have a rounded circular or oblong geometry and a tapered or rounded profile, and further that "one or more prongs or tangs [180a and 180b] . . . extend beyond the end of the hollow barrel" "to help stabilize the position of the working channel in the SI joint." *Id.* at 15:8–35.

One tool disclosed by Schifano to be used within working channel 239 is chisel 131, which is illustrated at Figure 24, reproduced below:

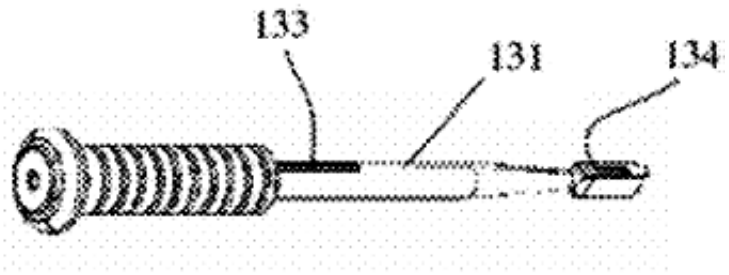


FIG. 24

Figure 24 is a perspective, side view of a box chisel from its proximal end and it shows chisel 131, which has distal tip 134 with cutting edges, and timing feature 133 that mates with the inside of working channel 239, and Schifano discloses that the chisel is used "to provide an opening in the bone [at the SI joint] with desired dimensions." *Id.* at 6:34, 19:44–67. Schifano discloses that "distal tip 134 may also have a containment device for removal of surgical site bone and windows may exist in the containment device to collect bone debris and remove bone debris." *Id.* at 19:54–58.

We note Schifano also discloses using a drill bit apparatus to displace bone in the SI joint. *Id.* at 5:1–28, 19:31–43. However, we also note Schifano discloses that the use of a drill is optional, as it "may be included in the set" of tools. *Id.* at 19:31–43.

2. Compton (Ex. 1004)

Compton issued as U.S. Patent 10,219,841 B1 on March 5, 2019, from U.S. Application 15/793,105, which was filed on October 25, 2017. Ex. 1004, codes (10), (45), (21), (22).

In its Abstract, Compton states:

> Bone structure coupling devices and methods are provided herein. An example method includes positioning a tubular retraction guide body into a patient, the tubular retraction guide

> body having two prongs that are positioned in a joint between two adjacent bone structures, creating a hemispherical groove on each of the two adjacent bone structures using a drill bit passed through the tubular retraction guide body, incising out the hemispherical grooves with a broach passed through the tubular retraction guide body, and inserting a graft body having a generally rectangular cross sectional area into the angular grooves to couple the two adjacent bone structures together.

Ex. 1004, Abstract.

Compton illustrates the tubular retraction guide body mentioned in its Abstract, at Figure 3, reproduced below:

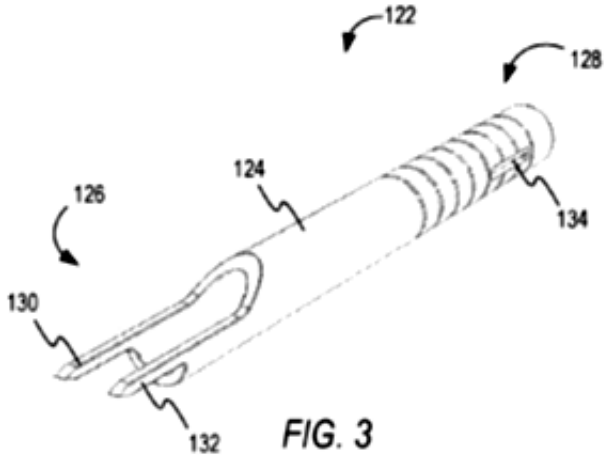


FIG. 3

Figure 3 "is a perspective view of a retraction guide," and Compton discloses that it shows retraction guide 122 with body 124 that is hollow to allow it to fit over a finder device, and also having first end 126 and second end 128, where first end 126 has body arms 130 and 132, which are to be "driven into the SJ." *Id.* at 2:17–18, 3:52–65.

Compton discloses that "[t]he retraction guide 122 stays in place inside the SJ [sacroiliac joint] while subsequent devices and methods are utilized in cooperation with the retraction guide body 122." *Id.* at 4:11–13. A method disclosed by Compton includes drilling through retraction guide

122 with drill bit 136 into the bone to create a hole. *Id.* at 4:14–34. This is followed by using broach device 148 having handle 156 and incising member 164, also within retraction guide body 122, to create angular grooves in adjacent bone structures of the SJ. *Id.* at 45–67.

Figures 6 and 7, reproduced below, illustrate such a broach with an incising member:

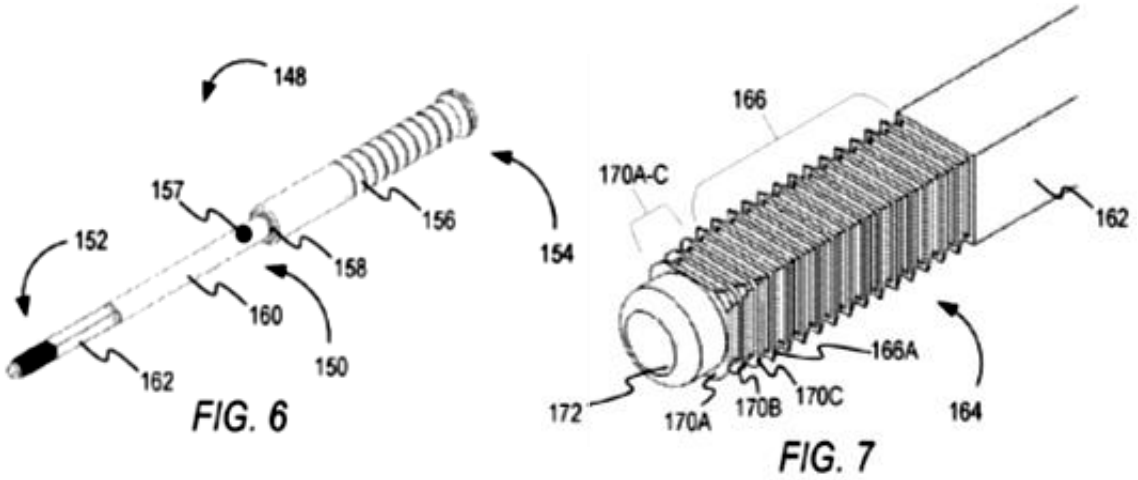


FIG. 6

FIG. 7

Figure 6 shows a perspective view of a broach device and Figure 7 shows a close up view of the incising member of the broach device. *Id.* at 2:23–26. These figures show broach device 148 having body 150 with first end 152 and second end 154, the latter having handle 156 with collar 158. *Id.* at 4:45–59. Cylindrical portion 160 of broach device 148 extends from handle 156 and transitions to substantially rectangular portion 162, which terminates in (still-rectangular) incising member 164. *Id.* Incising member 164 has cutting teeth 166 and cylindrical tip 172. *Id.* at 5:1–25.

The results of using retraction guide 122, drill bit 136, and broach device 148 can be seen at Figure 15, reproduced below:

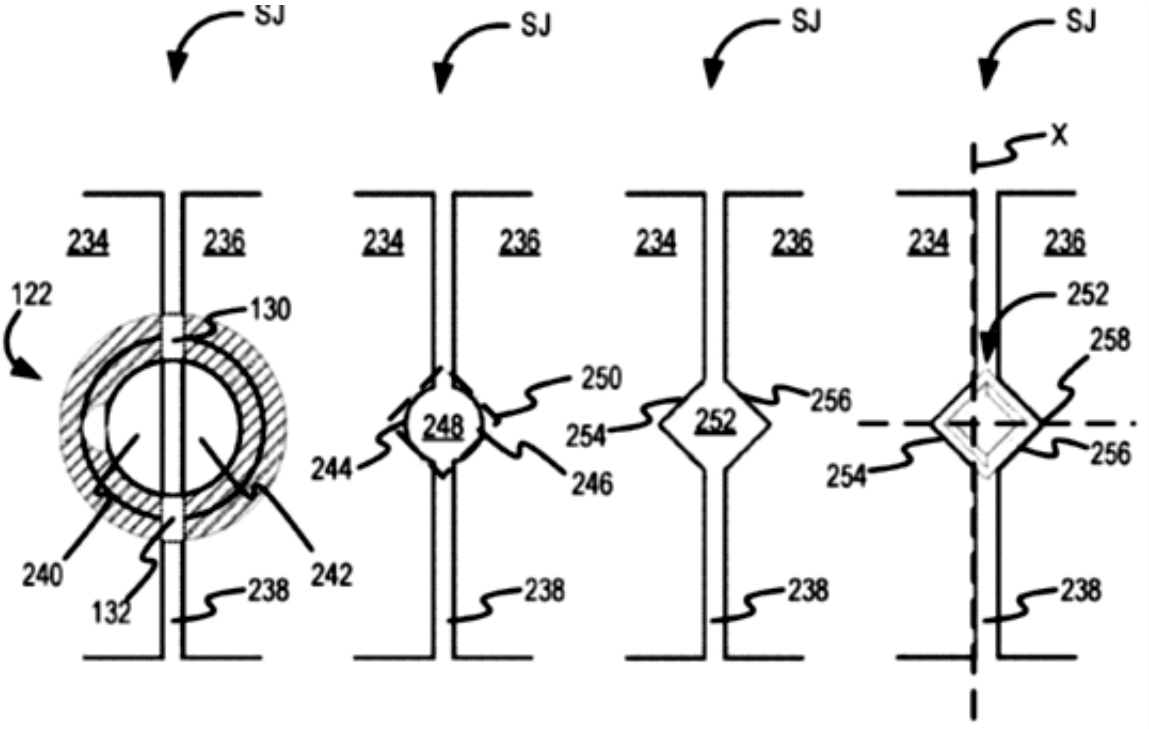


FIG. 15

Figure 15 shows the creation of a rectangle pilot hole that receives a graft at sequential stages shown in side-by-side illustrations of the localized SI joint (synonymous with "SJ" used in reference) being treated. *Id.* at 2:43–45. Figure 15 shows SI joint having sacrum 234 and ilium 236. *Id.* at 6:60–63. The figure further shows body arms 130 and 132 of retraction guide 122 in the SI joint, where the retraction guide allows a pathway to be positioned over bone structures 234 and 236. *Id.* at 7:8–15. Drill bit 136 is passed through retraction guide 122 and creates aperture 248, then incising member 164 is driven into hole 248 to create rectangular pilot hole 252. *Id.* at 7:16–49.

3. Black (Ex. 1005)

Black published as US 2016/0310197 A1 on October 27, 2016, and was filed as U.S. Application 15/136,615 on April 22, 2016. Ex. 1005, codes (10), (43), (21), (22).

Black's Abstract states:

> A system for preparing the sacroiliac (SI) joint for an SI joint fusion, and optionally delivering an implant to the SI joint, is described herein. The implant is inserted via an inferior inlet approach. A sliding joint finder is inserted into the joint, followed by insertion of a working cannula. The working cannula is operatively coupled to the sliding joint finder, in that it is configured to fit over the sliding joint finder, allowing subsequent removal of the sliding joint finder, and providing a hollow cavity for joint fusion preparation, decortication and insertion of an implant. This system and method provides a less invasive and safer approach for fixing an SI joint or delivering an implant to the SI joint than currently available methods.

Ex. 1005, Abstract.

A working cannula, as mentioned in the Abstract, is illustrated at Figure 3A, reproduced below:

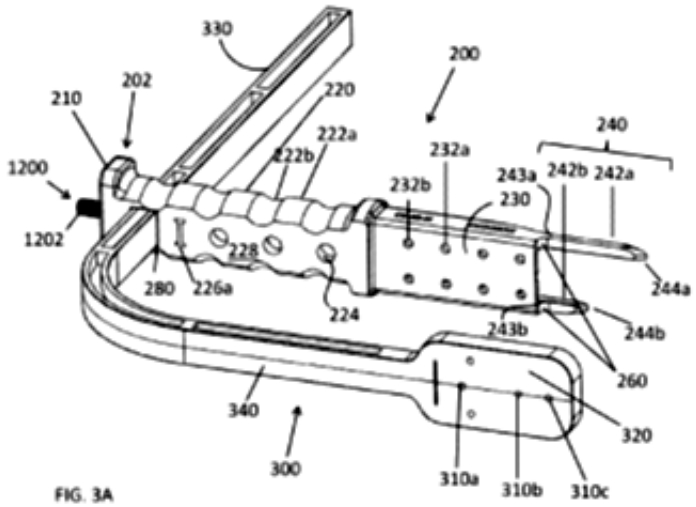


FIG. 3A

Figure 3A shows a side view of a working cannula. *Id.* ¶ 15. Black discloses that

> The working cannula is an instrument that has a suitable height and width for insertion into the SI Joint and to interact with the other tools in the system. The working cannula contains a cavity, which runs down the central axis. The cavity provides a working space through which other tools in the system are inserted and within which the other tools are used to prepare the SI Joint, or insert the implant into the SI Joint.

Id. ¶ 45. Figure 4 shows working cannula's 200 distal end 210 and proximal end 240, and further has two protrusions 244a and 244b at proximal end 240.[14] *Id.* ¶ 48. "The distance between the two protrusions is selected so that the protrusions fit directly into the SI joint (FIG. 10). The distance between the protrusions is selected to allow insertion of an implant, such as a spacer, directly between them." *Id.* Working cannula 200 also has shelf 260 that, in use, is adjacent the ilium and an opposite side that, in use, faces the sacrum (one may be marked with an "I" and the other an "S"). *Id.* ¶¶ 49–50.

Black discloses that in one embodiment a drill is used within the working cannula to prepare the implant site. *Id.* ¶¶ 67–69. Black discloses that in another embodiment, a box chisel is used in the working cannula to

[14] Black appears to use the terms "distal" and "proximal" in the opposite way as the other cited references discussed herein. It is our understanding that in the relevant field "distal" refers to things further from a user or center and "proximal" refers to things closer to a user or center, which is how we understand the other cited references to use the terms. This does not affect our understanding of Black's disclosure.

prepare the SI joint for implant. *Id.* ¶¶ 70–73. Figure 7, reproduced below, illustrates a box chisel:

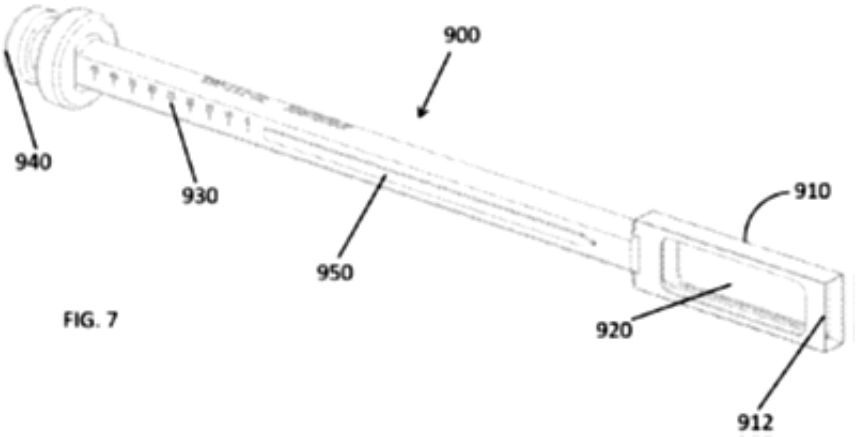


FIG. 7

Figure 7 is a perspective view of box chisel 900 and shows it has a sharp rectangular cutting edge 912 at proximal end 910 and box-shaped cavity 920 with slots or windows to collect and remove bone fragments. *Id.* ¶ 71.

Black also discloses an embodiment where a joint rasp is used in the working cannula. *Id.* ¶¶ 74–80. Figure 8, reproduced below, illustrates a rasp:

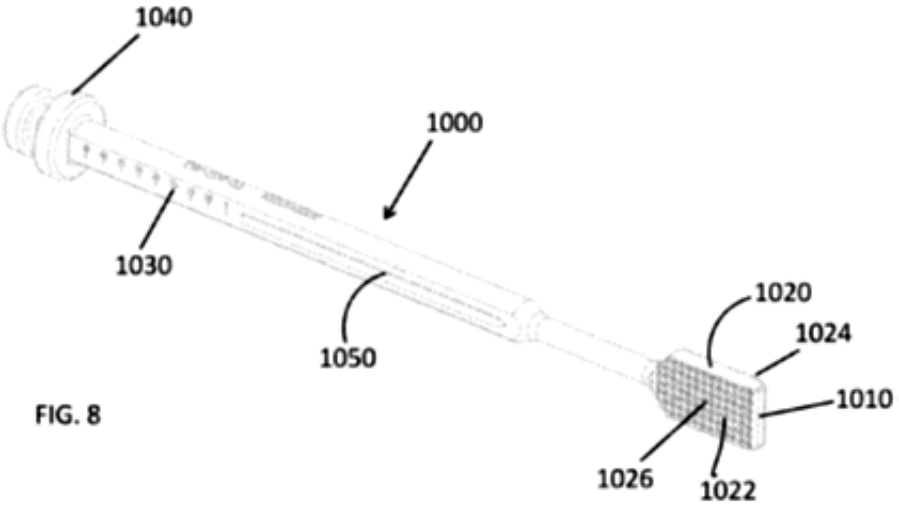


FIG. 8

Figure 8 shows a perspective view of rasp 1000 having rounded leading edge 1010, flat sides 1024 and 1026, each having sharp structures to create abrasive surfaces to aid in cutting away bone surfaces at the SI joint. *Id.* ¶¶ 76–77.

Each of box chisel 900 and rasp 1000 have distal ends, 940 and 1040 respectively, configured for attachment of other tools, for example "a slap handle for insertion or removal of the tool." *Id.* ¶¶ 73, 80.

4. Donner (Ex. 1006)

Donner published as US 2018/0036017 A1 on February 8, 2018, from U.S. Application 15/785,997, which was filed on October 17, 2017. Ex. 1006, codes (10), (43), (21), (22).

Donner's Abstract states:

> A method of surgically preparing a sacroiliac joint comprising: a) approaching a sacroiliac joint space with a joint preparation tool comprising a cutting element including an exterior having an asymmetric cutting band such that the first side includes a first surface having a first texture and the second side includes a second surface having a second texture, the first and second textures being different such that the first texture is substantially smoother than the second texture; and b) delivering at least a portion of the cutting element non-transversely into the sacroiliac joint space for decortication, the cutting element being oriented in the sacroiliac joint space such that the first surface opposes the generally softer sacrum and the second surface opposes the generally harder ilium in order to more aggressively prepare the surface of the ilium while not over-preparing the sacrum to provide a robust biologic environment for intra-articular fusion.

Ex. 1006, Abstract.

A joint preparation tool as mentioned in the Abstract is illustrated at Figure 7, reproduced below:

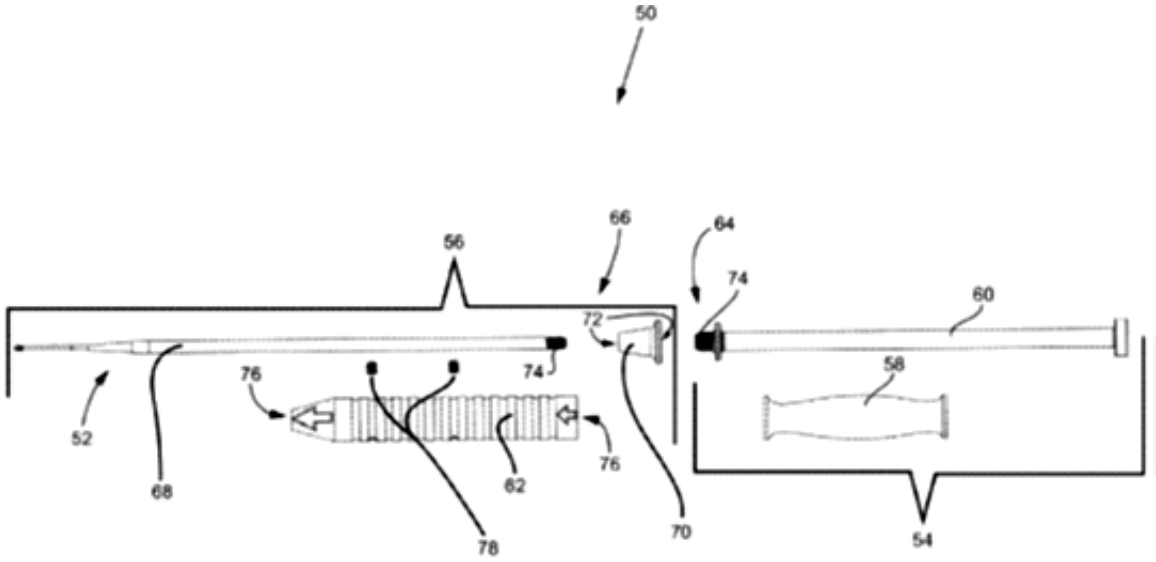


FIG. 7

Figure 7 shows an exploded side view of joint preparation tool 50, which includes cutting tool assembly 56 and slap hammer assembly 54. Ex. 1006 ¶¶ 43, 164. Cutting tool assembly 56 includes interchangeable tooling head 52, shaft 68, handle 62, and connector 70. *Id.* ¶ 164. Slap hammer assembly 54 includes handle 58, shaft 60, and threads 74 to connect it to cutting tool assembly 56. *Id.* Handle 62 may be locked in place with a pair of set screws 78 such that it abuts the connector 70. *Id.* Slap hammer assembly 54 is used for advancing into or backing tooling head 52 out of an SI joint. *Id.* ¶¶ 165–167.

As for tooling head 52 of joint preparation tool 50, Donner discloses several embodiments at Figures 18D, 19D, 20C, 21C, 22D, and 23D (*see id.* ¶ 179), reproduced side-by-side below:

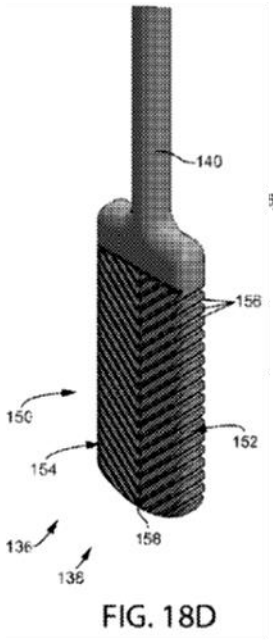


FIG. 18D

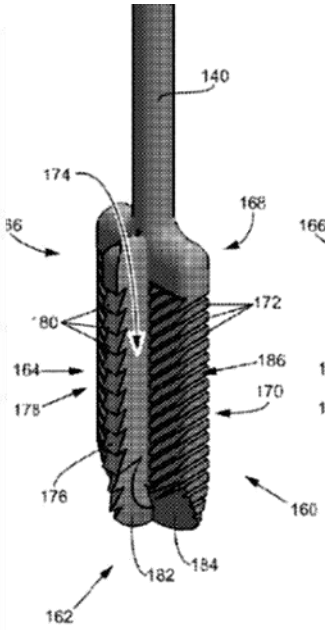


FIG. 19D

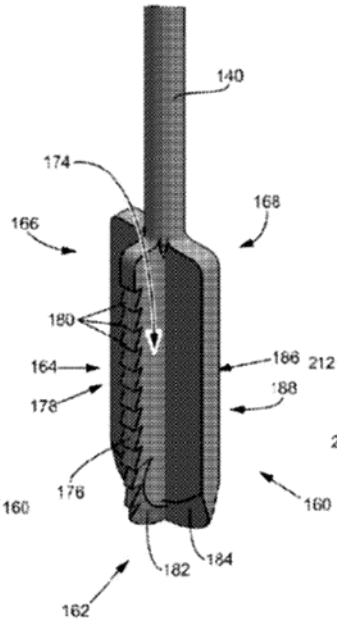


FIG. 20C

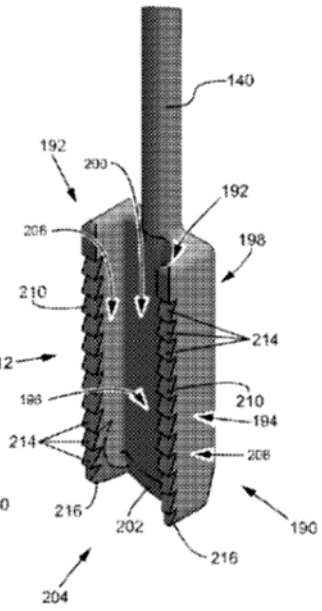


FIG. 21C

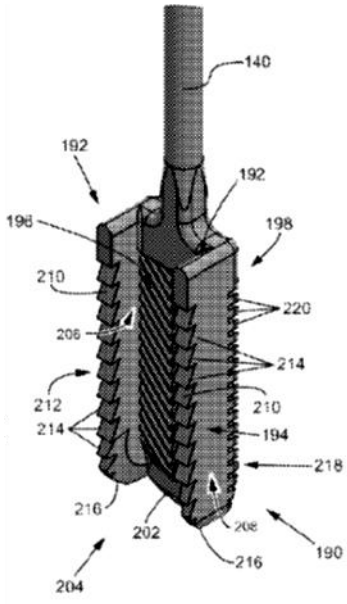


FIG. 22D

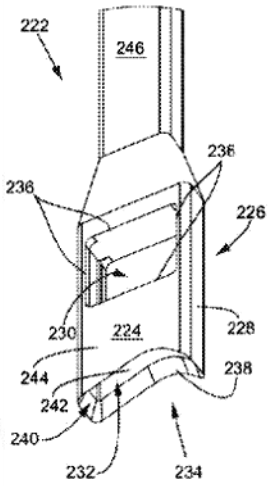


FIG. 23D

Figures 18D–23D above show close-up, isometric views of six variations of a tooling head, with all but Figure 23D showing the tooling head from a top

perspective, viewing the device from its more proximal end, while Figure 23D shows the tooling head from a bottom perspective, viewing the device from its more distal end. *Id.* ¶¶ 61, 65, 68, 71, 75, 79. Each tooling head is attached to a shaft, 140, 246, and each tooling head is generally rectangularly shaped.

Tooling head of Figure 18D is shown as planar rasping head 136, which has a pair of opposing planar surfaces 150 and a pair of opposing side edges 152 therebetween, all having ridges 156. *Id.* ¶¶ 181–182. Tooling head shown in Figure 19D is also planar rasping head 160 like that of Figure 18D, but adds a perpendicularly extending cutting element 164 rising from planar surface 166 and double chamfered tip 184. *Id.* ¶ 184. Tooling head shown in Figure 20C is another planar rasping head 160 and is like that shown in Figure 19D, but planar surface 188 has no ridges. *Id.* ¶ 187. Tooling head of Figure 21C is planar rasping head 190, which has a pair of perpendicularly extending cutting elements 192 with teeth 214 on each side edge 194 and double chamfered tip 202, defining an area with inner surfaces 200, 206. *Id.* ¶ 188. Donner discloses that such a device is used to cut the ilium at the SI joint, then withdrawn, rotated 180°, and reinserted to cut the sacrum at the SI joint for an implant. *Id.* ¶ 189. The tooling head of Figure 22D is shown as planar rasping head 190 having a pair of perpendicularly extending cutting elements 192 and is very similar to the device of Figure 21C, but adds rasping surface 218 with ridges 220 on inside planar surface 196 and outside planar surface 198. *Id.* ¶ 190. Finally, the tooling head of Figure 23D is box osteoma head 222, which has planar top member 224, planar bottom member 226, side members 228, openings 230, and open

distal end 234 exposing cavity 232 inside the tooling head, and cutting edge 238. *Id.* ¶ 191.

Donner also discloses that a drill may optionally be used to prepare an SI joint for implant. *See id.* ¶ 270, Fig. 44.

5. Otte (Ex. 1007)

Otte published as US 2005/0080422 A1 on April 14, 2005, from U.S. Application 10/685,768, which was filed on October 14, 2003. Ex. 1007, codes (10), (43), (21), (22).

Otte's Abstract states:

> A set of surgical instrument[s] for use with expandable spinal implants. The set of instruments includes box chisels designed to prepare a site for implant placement. The set of instruments also includes inserter/expander instruments configured to place and expand an implant at the site. The set of instrument[s] further includes assembling/collapsing instruments configured to assemble an implant, and collapse or reduce the height of an expanded implant.

Ex. 1007, Abstract.

A box chisel as mentioned in the Abstract is illustrated at Figures 6 and 7, reproduced below:

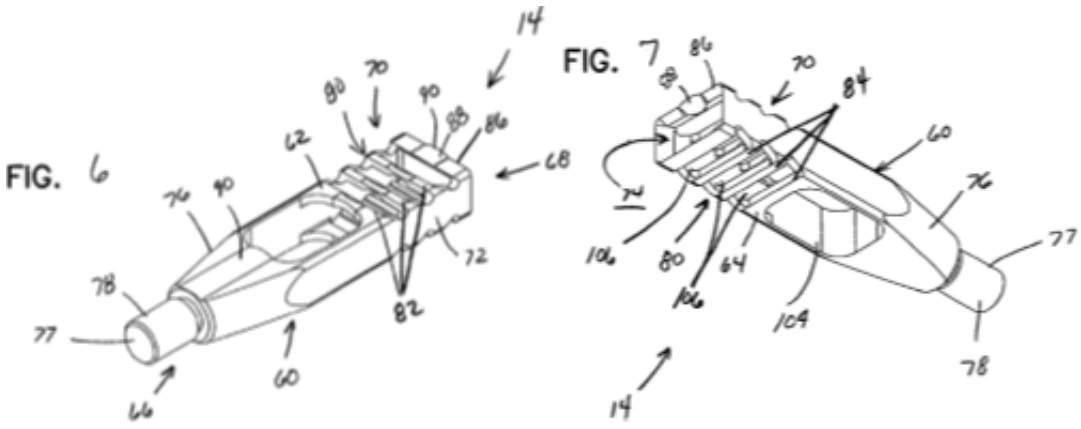


Figure 6 (above, left) is a top perspective view of a box chisel and Figure 7 (above, right) is a bottom perspective of the same box chisel. *Id.* ¶¶ 20–21. The figures show box chisel 14 having working portions 70 at distal end 68, hollow construction 72 and central open region/interior space 74. Box chisel 14 also has perimeter cutting edge 86, and surface texture/scraping arrangement 80 and can be forcibly inserted into or hammered between vertebral elements for site preparation to cut out a plug of material for removal. *Id.* ¶ 68. Such a box chisel can also, in other embodiments, have rasping surfaces 130, 131. *Id.* ¶¶ 78–80, Figs. 11, 12.

6. Martz (Ex. 1008)

Martz published as US 2005/0090829 A1 on April 28, 2005, from U.S. Application 10/808,186, which was filed on March 23, 2004. Ex. 1008, codes (10), (43), (21), (22).

Martz's Abstract states:

> A chisel with distal cutting edges, used to form channels in adjacent vertebrae, includes a shank having a longitudinal axis and a cutting head coupled to the distal end of the shank. The cutting head includes distal cutting edges, which may be linear, arcuate, or V-shaped, and a guide member, which may be hollow or formed as two spaced members, to guide the chisel into the disc space to uniformly chisel both adjacent vertebrae simultaneously to partially form a channel in the vertebrae. The guide member and cutting head may have openings for distributing cut debris to the top and bottom surfaces of the head. The guide member may also include distal transverse, longitudinal side and/or vertical cutting edges, some of which may be in stepped relationship, for further cutting the endplates and removing disc material from between adjacent vertebrae, and for scraping of endplates. Other embodiments are disclosed.

Ex. 1008, Abstract.

A chisel as mentioned in the Abstract is illustrated at, *inter alia*, Figures 76a, 76c, and 78, reproduced below:

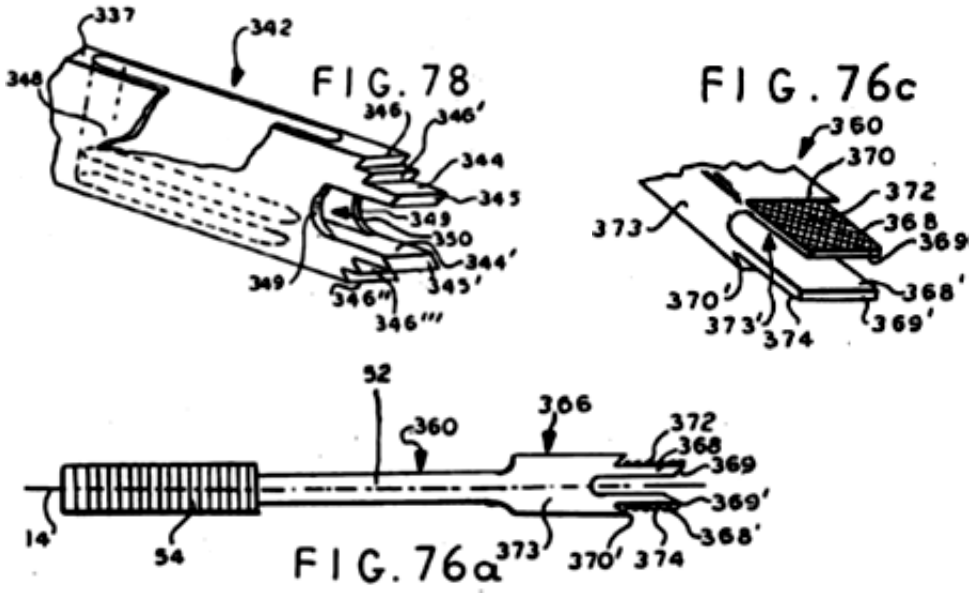


FIG. 78 (above, top-left) is a detailed isometric view of a chisel head showing the proximal stepped cutting edges and spaced guide members including distal cutting edges, Figure 76a (above, bottom) is a side view of a similar chisel instrument with a shank and a handle, terminating in a cutting head, and Figure 76c (above, top-right) is a more detailed isometric view of the same cutting head. *Id.* ¶¶ 186, 188, 204.

Figure 78 shows cutting head 342 with guide members 344, 344' that respectively terminate in distal cutting edges 345, 345', but also includes proximal cutting edges 346, 346'. *Id.* ¶ 302. "The guide members 344 and 344 respective cutting edges 345, 345' cut disc material from adjacent vertebrae while guiding the proximate cutting edges to meet and cut from adjacent vertebrae." *Id.* ¶ 304.

Figures 76a and 76c show cutting head 342, which is described as "similar to the previous instrument," having a pair of rasp surfaces 372, 374, adjacent cutting edges 370, 370' where those rasp surfaces 372, 374 meet the body of the cutting head, and a pair of cutting edges 369, 369' at the distal ends of rasp surfaces 372, 374, where an open area (not numbered) is defined inside rasp surfaces 372, 374. *Id.* ¶¶ 305–306. Martz states that "[t]he rasp surface 372 preferably thus is on the top and bottom opposite surfaces of both of the guide members 368 and 368' and may be used to scrape disc material and bone from adjacent vertebrae." *Id.* ¶ 306.

7. Sharma (Ex. 1009)

Sharma published as WO 2014/091454 A1 on June 19, 2014, from international patent application PCT/IB2013/060900, which was filed on December 13, 2013. Ex. 1009, codes (10), (43), (21), (22).

Sharma's Abstract states:

> The present invention relates to universal impactor with slap hammer device for applying force for use to assist in the impaction and/or extraction of surgical instrument attached thereto from an orthopedics structure. The device acts as an impacting tool that is useful for mating to a medical instrument used during surgery. It can also be converted to an extracting tool by manipulating the quick release mechanism. The impacting/extracting device is effective in applying an axial force to the medical instrument to efficiently and effectively prepare a bone structure, insert or remove implant trial, insert or remove implant, or to remove a medical instrument from the bone structure.

Ex. 1009, Abstract.

Figure 4, reproduced below, illustrates a slap hammer device as mentioned in the Abstract:

FIGURE 4

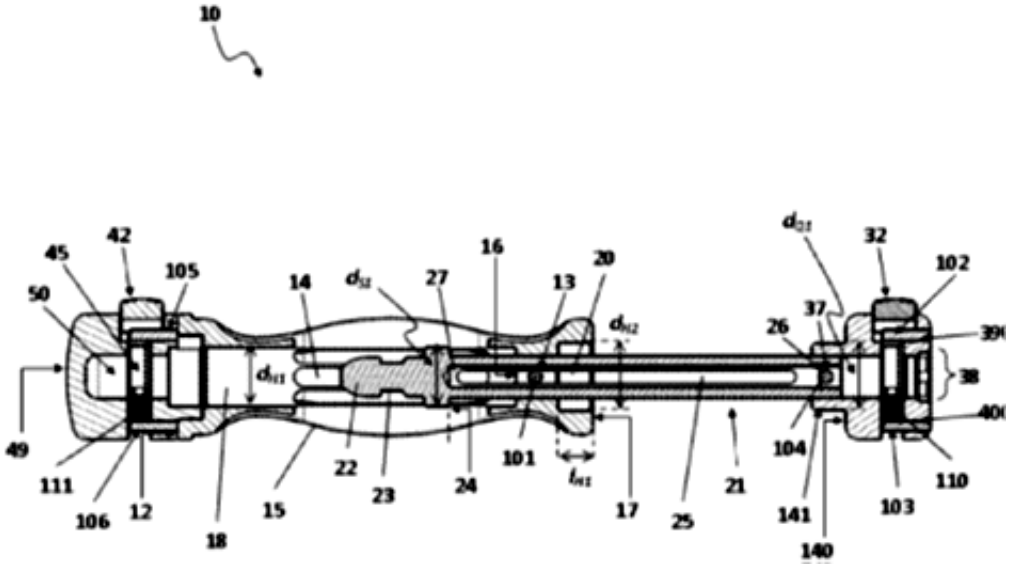


Figure 4 "is a cross-sectional illustration of the all of the components of the universal impactor with slap hammer." *Id.* at 6:21–22, Fig. 1 (a 3D perspective drawing of the device). Figure 4 shows slap hammer 10, composed of, *inter alia*, central shaft 21, impaction surface 49, proximal button 42, locking pin 105, spring 111, bulleted tip 22, hollow handle 11 (not numbed in figure) with outer surface 15. *Id.* at 9:14–11:11. "The hollow handle (11) is selectively movable between a first, distal position (shown in Fig 5A) and a second, proximal position (shown in FIGS. 1 and 5B), and is effective to apply a force to the instrument in both the proximal and distal direction." *Id.* at 11:23–26.

Sharma discloses that:

> The mechanical locking mechanism on the other hand is achieved by the locking of proximal tip of central shaft by pressing the proximal button located on proximal impaction end. The mechanical locking mechanism located on said proximal impaction end is selected from a variety of locking mechanisms including spring loaded button, rotating and

> unlocking screw or a taper lock. The mechanical locking mechanism located on said proximal impaction end passively receives proximal tip end of central shaft when the tip is bulleted, or by positively pressing said mechanical locking mechanism as a toggle key to allow locking in and releasing, when tip of said central shaft is flat. The mechanical locking mechanism located on said proximal impaction end receives proximal tip end of central shaft locking in to facilitate use of said device as impactor device, releasing said proximal tip end of said central shaft on pressing said mechanical locking mechanism to facilitate use of said device as extractor device.

Id. at 4:24–5:2. Further, Sharma states that "the central shaft is pushed into the integrated hollow handle [until] the tip at the proximal end of the central shaft clicks into the proximal impaction end locking it into place and thereby turning the device into an impactor," and when "the proximal button (42) on the proximal impaction end (41) is pressed to release the tip of the central shaft enabling the shaft to move within the integrated hollow handle." *Id.* at 20:6–16.

E. ANALYSIS OF PATENTABILITY CHALLENGES

As summarized above, Petitioner asserts five grounds for the unpatentability of claims 1, 2, 9, and 10 of the '129 patent. *See supra* Section I.D; *see also* Pet. 3. We review Petitioner's challenges and Patent Owner's arguments below.

Our reviewing court has explained that in *inter partes* review proceedings, the petitioner bears the burden and must "show with particularity why the patent it challenges is unpatentable." *Harmonic*, 815 F.3d at 1363. The petitioner must provide an understandable explanation of the element-by-element specifics of its unpatentability contentions, identifying supporting disclosures from the asserted prior art. *See* 35 U.S.C. § 312(a)(3).

This burden, combined with the structure of Board proceedings, means that, "in some cases, a challenge can fail even if different evidence and arguments might have led to success." *Ariosa Diagnostics v. Verinata Health. Inc.*, 805 F.3d 1359, 1367 (Fed. Cir. 2015); *see also Corphotonics, Ltd. v. Apple Inc.*, 84 F.4th 990, 1001–02 (Fed. Cir. 2023) ("The IPR petition, thus, must provide an *understandable explanation* of the element-by-element specifics of the patentability challenges, including the identification of particular portions of prior art on which the petitioner is relying." (emphasis added)).

Furthermore, "[a]n inter partes review must proceed 'in accordance with or in conformance to the petition,'" and "'the statute tells us that the petitioner's contentions, not the Director's [or Panel's] discretion, define the scope of the litigation all the way from institution through to conclusion,'" thus "[i]t would . . . not be proper for the Board to deviate from the grounds in the petition and raise its own obviousness theory." *Sirona Dental Sys GmbH v. Inst. Straumann AG*, 982 F.3d 1349, 1356 (Fed. Cir. 2018) (quoting *SAS Inst., Inc. v. Iancu*, 584 U.S. 357, 365–667 (2018)).

We follow this guidance as we analyze Petitioner's positions here.

1. Ground 1 — Asserted Obviousness of Claims 1, 2, 9, and 10 over Compton, Donner, Otte, and Sharma

Under Ground 1, Petitioner asserts that the combination of Compton, Donner, Otte, and Sharma render the subject matter of challenged claims 1, 2, 9, and 10 obvious. *See* Pet. 51–60.

Petitioner begins by asserting that there existed motivation or reason to combine these references. *Id.* at 51–53 (citing Ex. 1017 ¶¶ 111–127 (the first Drewry Declaration offers the same language found in the Petition, without additional evidence or analysis). Petitioner asserts that the

motivation stems from "significant overlap in both instrumentation and methodology" among the references, and that a desire for greater efficiency would have driven an ordinarily skilled artisan to combine what were multiple, separate tools into a single tool for SI joint preparation, and that doing so would have led to "predictable improvements in efficiency." *Id.* at 51–53 (citing Ex. 1004, 4:35–53, 5:1–44; Ex. 1006 ¶¶ 164, 188; Ex. 1007 ¶¶ 56–59; Ex. 1009, 3:1–3; Ex. 1017 ¶¶ 111–113). Specifically, Petitioner asserts that

> It would be obvious to a POSITA to combine the ***use of joint preparation tool of Donner with the SI Joint method of Compton*** because the joint preparation tool of Donner prepares the SI Joint and articular surfaces of the SI Joint with a single tool, ***instead of multiple separate tools such as a chisel, a rasp, and other tools***. (Ex.1017; ¶111). Additionally, the joint preparation tool of ***Donner includes a slap hammer portion, and thus provides a single tool that [] includes a cutting tool and slap hammer functionalities*** operable to efficiently prepare the SI Joint for the insertion of a fusion implant. (Ex.1006, ¶[0164]).

Id. at 52 (emphasis added). We note that this explanation does not indicate *how* Donner's tool will be used in Compton's method, does not explain *which* of Compton's *actually disclosed* tools, if any, will be substituted with Donner's tool in Compton's method, and does not articulate how Compton's tools might be *modified* in view of Donner's teachings. Petitioner attempts to explain how one of ordinary skill would have combined the prior art in an immediately subsequent section of the Petition, but, as discussed below, fails to sufficiently do so. *See, e.g.*, *id.* at 56.

> Regarding adding Otte, Petitioner states the reference,
>
> discloses methods and instruments for preparing the intervertebral disc space for implants in a spinal fusion surgery

> and methods of preparing the spinal disc space. (Ex.1007, ¶¶[0056]-[0059]). Spinal fusion surgeries are ***closely related*** to SI Joint fusion surgeries as they both deal with fusion of vertebral bones, both are performed by orthopedic spinal surgeons, and they ***use similar tool sets*** in similar manners. (Ex.1017; ¶112). ***Thus, it would be obvious to a POSITA to combine*** the teachings of Otte including the disclosed instruments and techniques, with the SI Joint fusion methods of Compton and Donner.

Id. at 52–53 (emphasis added). This assertion suffers from a similar lack of reasoning and explanation as that concerning Donner. Moreover, in the immediately subsequent section of the Petition, when attempting to explain how the prior art should be combined, Petitioner merely states what Otte allegedly teaches, i.e., a box chisel, without explaining how one of ordinary skill in the art would have used Otte's chisel or otherwise combined Otte's chisel with the features/methods of the other cited references. *See, e.g., id.* at 56–57.

> And, finally, regarding Sharma, Petitioner states, *inter alia*, that
>
> The slap hammer device of Sharma is designed for general use in orthopedic procedures. (Ex.1009, p.3, ll.1-3). It would be obvious to use the universal impactor with slap hammer device of Sharma to assist in the impaction and/or extraction of attached surgical instruments in an SI Joint fusion procedure, such as chisels and rasps. (Ex.1017, ¶113).

Id. at 53. Again, Petitioner's assertion lacks any specifics as to how Sharma's slap hammer will be added to Compton's method or why a skilled artisan would have been motivated to modify the existing slap hammer of Donner in view of Sharma's teachings.

Before moving on to Petitioner's allegations under Ground 1 as to how the prior art should be combined, it is important to identify certain facts. Compton discloses a broach 148 (this is *the tool* asserted by Petitioner to

teach the abrading device claim element), not a chisel or rasp (as indicated in the above-discussed portion of the Petition as the Compton tools to be merged into a single tool). Petitioner conceded at oral argument that the Petition does not assert the use of Donner's tool instead of Compton's drill and broach, specifically, but explained that the combination Petitioner had *intended* to include in the Petition under Ground 1 was "the combination of a chiseling and rasping tool [of Donner to] replac[e] the drill and the broach" of Compton. *See* Hr'g Tr. 43:25–44:16; Reply 18. Petitioner asserted at the hearing that the Petition's lack of specificity as to which of Compton's tools (e.g., the drill and the broach) would have been replaced by or modified in view of Donner's preparation tool (to use in Compton's method) was "a bit of clerical error," and that the Petition "should have said, drill." Hr'g Tr. 45:24–46:8, 46:19–21.

Turning to the limitations of independent claim 1, Petitioner maps the limitations to the teachings of Compton, Donner, Otte, and Sharma. Pet. 54–59. Under Ground 1, Petitioner points primarily to Compton as teaching a method of preparing an SI joint for an implant as claimed (also noting Donner teaches the same type of procedure using similar components), and as using most of the recited elements of claim 1 for the procedure, e.g., a guide rod or finder device 100 to locate an "insertion point," and retraction guide 122 as the recited "working channel." *Id.* at 54–59 (citing Ex. 1004, 2:51–3:16, 3:28–45, 3:52–65, 5:1–25, 6:51–59, 7:8–11, 7:42–53, Fig. 3; Ex. 1006 ¶¶ 145, 156, 164–167, 188–190; Ex. 1017 ¶¶ 115, 123, 125, 127, 270). Petitioner notes that Donner teaches that omitting the use of a rotary cutting instrument, such as a drill, in SI joint fusion prep was known. *Id.* at 54, 59 (citing Ex. 1006 ¶ 270; Ex. 1017 ¶ 127).

The parties agreed at oral argument that none of Petitioner's assertions regarding the prior art's teaching of the claim elements up to the point of claim 1's reciting "introducing an abrading device" are contested. *See* Hr'g Tr. 23:6–13. So, we will not further discuss those earlier-recited steps/elements and we focus our analysis on the steps and elements including and after "introducing an abrading device," namely, [1(d)] onward.

The Petition is specific that claim 1's step of "introducing an abrading device into the working channel," is taught by ***Compton's broach 148*** being the recited "abrading device," having cutting teeth 166 (i.e., the recited "abrading surfaces") on opposing sides. Pet. 55–56 (citing Ex. 1004, 5:1–25; Ex. 1003, 203–20).[15]

The Petition next confirms that Compton's abrading device (i.e., broach 148) does not have the claimed "open tip comprising a cutting edge disposed at a leading edge . . . configured to cut bone tissue." *Id.* at 56. The Petition points to Donner's teaching of tooling head 52 having top surface 196 and bottom surface 198 as opposing sides, rasping surface 218 as an abrading surface, ridges 220, and cutting edge 216. *Id.* (citing Ex 1006

[15] As we expressly identified in our Institution Decision (at n.13), at points, Petitioner appears to intend to cite relevant portions of Compton (Ex. 1004), but instead refers to Exhibit 1003 (i.e., Schifano); we understand this, to some extent, to be clerical error and that some citations should be to Compton. *See* Pet. 55–56. However, one such cite (i.e., Ex. 1003, 20:3–20) cannot be explained as mere clerical error because the Compton reference does not have 20 columns of disclosure. *See* Ex. 1004. Thus, there remains confusion about Petitioner's cited evidence under Ground 1. This fact was pointed out in our Institution Decision, but Petitioner did not attempt to clarify the record.

¶¶ 188–190). The Petition asserts that Donner has "an open tip," without specifically identifying this feature in Donner or explaining why Donner's tip should be understood to be "open," as claimed. Critically, the Petition does not specifically explain how the above noted features asserted to be taught by Donner would have been included in any part of Compton's method. *See id.*

As noted above, the Petition asserts that it would have been obvious to "use the joint preparation tool of Donner" in Compton's method to replace Compton's "chisel, rasp, and other tools." *See supra* at 53–54. But, at oral argument and in its Reply, Petitioner conceded that the Petition *should have asserted, but did not assert* using Donner's tool to replace Compton's drill and broach. *Id.*; *see also* Reply 18 (Petitioner acknowledging the Petition's "drafting oversight" and that Compton does not disclose a chisel).

When discussing the final recited step (1(e)) of claim 1, i.e., "advancing the abrading device," the Petition states:

> Compton discloses inserting the broach 148 into the SI Joint through the working channel to decorticate the cortical tissue of the sacrum and ilium and prepare the bone tissue in an implant void in the SI Joint. (Ex.1006, 5:12-25, 7:42-53).
>
> To the extent that Compton does not teach all of the limitations of step (1(e)), Donner discloses a joint preparation tool 50 removes articular cartilage and cortical bone from the SI Joint space and abrades the articular surfaces. (Ex.1006, ¶[0145]; Ex.1017, ¶[0127]). The [Donner] tooling head 52 is used to prepare the SI Joint and form a decorticated implant void in the absence of a drill or other rotary cutting instrument. (Ex.1006, ¶[0145]; Ex.1017, ¶127). Drills are discussed in Donner as alternative embodiments to non-rotary cutting elements. (Ex.1006, ¶[0270]; Ex.1017, ¶127).

Pet. 58–59. Again, when attempting to explain how the prior art's tools or methods would have been used to achieve the claimed method, Petitioner doubles down on the position that the recited "advancing the abrading device" is taught by using Compton's broach 148. Petitioner again states what Donner discloses about a tool 50 with tooling head 52 for removing bone and cartilage, but does not specify how such a tool would have been incorporated into Compton's methods or how Compton's broach 148, which according to Petitioner *is the claimed abrading device*, would have been modified in view of Donner's tooling head 52.

Based on the positions expressed in the Petition, we are left with questions that the Petition does not answer (nor are they answered by looking to "the inferences and creative steps that a person of ordinary skill in the art would employ,'" as there is insufficient evidence of such in the record — *Intel*, 61 F.4th at 1380). If, as Petitioner proposes, the ordinarily skilled artisan would have used Compton's broach 148 as the claimed "abrading device" with opposing "abrading surfaces," for what purpose and when would Donner's tooling head 52 be used? How would the use of Donner's tooling head 52 have been coordinated with the use of Compton's broach 148? Or, alternatively, must Compton's broach 148 have been modified in some unidentified way in view of Donner's tooling head 52? If so, how and to what end would Compton's broach 148 be modified?

Petitioner also asserts that Otte teaches a box chisel of rectangular shape with a perimeter open cutting edge 86. *Id.* at 56–57 (citing Ex. 1007 ¶¶ 56–57, 64, 66, 68, 72 (and by implication, Figs. 1, 2, 6–10, which are discussed therein)). But, the Petition does not state that a skilled artisan would have found it obvious to use Otte's chisel or features thereof in

Compton's method, much less articulate reasoning explaining how they would go about doing so. *Id.*

Regarding the "slide hammer" and "releasing means" elements of claim 1, which are recited components of claim 1's "slide hammer assembly," Petitioner asserts that slide/slap hammers were commonly used, and that including such with Compton's tools and methods would have been routine. *Id.* at 57 (citing Ex. 1004, 6:51–59; Ex. 1017 ¶ 123). Petitioner points to Donner's disclosure of slide hammer assembly 54 for SI joint fusion procedures, and then points to Sharma's disclosure of a slap hammer device as a modular end to attach to chisels or rasps that includes push button locking mechanism 42 to lock and unlock impact hammer (handle) 11 to central shaft 21. *Id.* at 48–57 (citing Ex. 1006 ¶¶ 165–167; Ex. 1009, Abstract, 2:29–32, 3:1–3, 3:7–9, 4:24–32, 9:1–5, 19:15–18, 20:6–16, Figs. 1, 4; Ex. 1017 ¶ 125). Petitioner asserts that adding Sharma's general purpose, universal slap hammer to Compton's or Donner's tools for use in their procedures would have been a predictable improvement in efficiency to benefit such tools/procedures. *Id.* at 53, 58 (citing Ex. 1017 ¶¶ 113, 125).

On this, additional questions are presented, but are left unanswered by the Petition. If, as identified by Petitioner, Donner's system/device already incorporates a slap hammer assembly, which we agree it does as element 54 (*see, e.g.*, Ex. 1006, Fig. 7), *why* would a skilled artisan have been motivated to use the additional slap hammer of Sharma? For example, what purpose would Sharma's slap hammer have served or advantage would it have provided that was not already served or provided by Donner's slap hammer?

Regarding dependent claims 2, 9, and 10, Petitioner also maps their limitations and elements to the teachings of Sharma and Compton, which

Petitioner asserts teach how the slap hammer is used to extract an instrument and that the holes formed by abrading tools can be rectangular to match the implant for which the SI joint is being prepared. Pet. 59–60 (citing Ex. 1004, 7:61–8:13, 7:42–53, 7:61–8:13, 8:24–28; Ex. 1009, 2:29–32, 3:1–3). Because each of these claims depends from independent claim 1 and our analysis directed to the challenged independent claim is determinative, we will not further analyze these dependent claims under Ground 1.

Patent Owner presents several arguments in opposition to Petitioner's Ground 1. *See* Resp. 20, *et seq*. Patent Owner argues that Sharma's locking mechanism cannot be the claimed "releasing means" because neither Sharma's locking mechanism nor its base is at the distal end of its slap hammer, per Patent Owner's now-proposed construction of the claim term. *Id.* at 20–28. We have not accepted Patent Owner's new interpretation of "releasing means . . . ," therefore, Patent Owner's arguments are not persuasive on this point.

Similarly, Patent Owner argues that Donner fails to teach an "open tip," as Patent Owner now proposes interpreting that claim term, because Donner fails to disclose an interior void behind its tool's abrading surfaces, or one that enables dislodged tissue to enter the void. Resp. 39–44. We have rejected Patent Owner's newly proposed interpretation of "open tip," and for this reason this argument is not persuasive.

Patent Owner's other arguments, however, are persuasive.

Patent Owner argues that Petitioner's asserted motivation to combine Compton and Donner is insufficient under *Intel*, 61 F.4th 1373, because no known problem is identified in the Petition as being addressed by the combination. Resp. 28–30. Relatedly, Patent Owner argues that the Petition

fails to provide a sufficient analysis to explain the ordinarily skilled artisan's motivation to combine Compton, Donner, Otte, and Sharma (under Ground 1), and Patent Owner identifies factual errors in Petitioner's assertions (e.g., Compton does not disclose or, at least, Petitioner does not cite where it does, chisels or using separate chisels and rasps that could be made into one tool) calling into question Petitioner's "efficiency" rationale. *Id.* at 30–44, 49–52. Patent Owner makes some compelling points.

Petitioner's rationale for motivation to combine is, as discussed above, premised on making Compton's method more efficient by using Donner's tool, which, according to Petitioner, would (somehow) have allowed the functions of multiple tools to be achieved with one tool. *See* Pet. 53. Although we agree with Petitioner that efficiency can be a valid motivator for the ordinarily skilled artisan to combine prior art (*see Dystar Textilfarben Gmbh & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1368 (Fed. Cir. 2006); *Intel*, 61 F.4th at 1380 (addressing "universal" motivators); *see also* Reply 13–14 (citing *Dystar*)), as we discussed above, the Petition does not explain how Compton's broach 148 would have been combined with, or modified in view of, Donner's tooling head 52. Patent Owner argues that,

> In addition to being based on a conclusory and factually false premise, the Petition failed to provide any explanation as to *how* Donner's dual-keel rasping tool would have been used in Compton's method to replace the rasp—i.e., "broach device 148"—whose abrading head is specifically shaped to make a "substantially rectangular pilot hole" (Fig. 15) for an implant that has a "substantially rectangular shape that matches the substantially rectangular pilot hole" (Figs. 10-11). Ex. 1004 at 5:46-48. The Federal Circuit case law dictates that unpatentability grounds that do not "clearly explain[], or cite[]

> evidence showing, *how* the combination of the two references was supposed to work" are legally insufficient for establishing obviousness. *Pers. Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 994 (Fed. Cir. 2017).

Resp. 34. Patent Owner follows that "neither the Petition nor Mr. Drewry's declaration identifies in what way is [*sic*] the efficiency of Compton would be improved when combined with Donner's dual-keel abrading tool, and neither the Petition nor Mr. Drewry's declaration provides any additional reasoning for the Compton-Donner combination." *Id.* at 34–35.

Regarding combining Otte with Compton, Patent Owner points out that Petitioner does not even suggest that it would improve efficiency, as with Donner, but merely asserts that Otte is similar enough to Compton to use Otte's instruments. *Id.* at 35–36. Regarding adding Sharma to the combination, Patent Owner identifies that the Petition again asserts "efficiency," but Patent Owner argues it is merely conclusory and does not identify what the improvements in efficiency would be if Sharma was added. *Id.* at 37–38.

Related to these arguments on motivation to combine are Patent Owner's arguments that the Petition fails to set forth a cohesive combination of the features of the asserted prior art to arrive at the steps/elements of claim 1. Resp. 49–52.

Patent Owner argues that the Petition fails to explain how the multiple tools, e.g., disclosed by Compton, Donner, Otte, and Sharma, would have been combined into a single tool, with which, on review of the entire record, we agree. *Id.* Patent Owner points out that the Petition asserts combining Donner's and Otte's tools with Compton's *method, not its structures* — this is accurate. *Id.* at 51; *see* Pet. 52. Patent Owner argues that "the Petition

simply adds Donner's 'joint preparation tool 50' or Otte's 'box chisel' to Compton's method but 'does not contemplate [or, perhaps better stated, *assert*] any modifications to any of these surgical devices'" — this is also accurate. Resp. 51–52; *see* Pet. 55–59 (discussing how the prior art should be combined); *see also supra* at 55–58 (our discussion of Petitioner's assertions).

Patent Owner summarizes its argument, stating:

> Ground 1 maps the limitation "abrading surfaces" "*exclusively* [to] Compton's 'broach 148'" and then maps the limitation "open tip" to "Donner's 'joint preparation tool 50' and Otte's 'box chisel'" but fails to set forth a cohesive combination of these discrete structural features of separate surgical instruments to arrive at a *single* abrading device that meets every element of claim 1.

Resp. 52.

These are persuasive arguments and, because we agree with Patent Owner, we conclude the Petition fails to establish by a preponderance of the evidence that the claims are unpatentable under Ground 1.

Patent Owner cites *Personal Web Technologies*, where the Federal Circuit vacated (and remanded) a Board decision for diverging from a petition's allegations on obviousness in *inter partes* review without sufficiently explaining why, and because the Board's decision lacked analysis on how the prior art combination taught certain claim elements when finding obviousness. *Pers. Web*, 848 F.3d at 993–94. *Personal Web Technologies* was directed to failures under the Administrative Procedures Act, which requires, *inter alia*, a Board decision showing the evidence upon which the Board's findings are based and the Board's reasoning in reaching its conclusions. *Id.* at 992. Our duty to provide such a reasoned and

supported decision here is impacted and stymied by the Petition's failure to provide explanations and evidence-supported rationale under Ground 1, as noted above. We will not use our imaginations to fill in the many gaps in the Petition's reasoning as they have been identified above.

"A patent composed of several elements is not proved obvious merely by demonstrating that each element was, independently, known in the prior art." *KSR*, 550 U.S. at 401. Nor is it enough to show that the references *could* be combined to arrive at the claimed invention. *Pers. Web*, 848 F.3d at 993–94; *see also Belden Inc. v. Berk–Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) ("[O]bviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention."). The Petition fails to sufficiently explain how the separate prior art disclosures would have been combined by the person of ordinary skill in the art to achieve the claimed invention. Thus, on the facts of this case, the Petition's bare bones assertion that one of ordinary skill in the art would have combined the references for sake of efficiency does not articulate sufficient reasoning with rational underpinning for the proposed combination.

In its Reply, Petitioner argues that, because the asserted prior art discloses instruments related to similar uses and such instruments are regularly adapted to adjust surgical approaches, there was motivation for the prior art's combination. Reply 15–17. This is, essentially, an argument that the references are *analogous* art — a conclusion with which we generally agree. *See, e.g., Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1000–01 (Fed. Cir. 2016). But, at most, this means the combination of prior art is possible, not that it would have been obvious to the ordinarily skilled artisan.

And, the mere fact that the asserted prior art relates to somewhat similar medical procedures and similar medical devices does not explain *how* the steps and features disclosed might actually be combined. Without knowing how the prior art's devices would have been combined, we are unable to agree with Petitioner that the ordinarily skilled artisan would have been motivated to make the combinations Petitioner asserts.

In response to Patent Owner's arguments, Petitioner appears to acknowledge the shortcomings of its Petition, specifically that the Petition *should have* asserted that using Donner's tool would allow the consolidation of Compton's drill and broach into a single tool, *somehow*. Reply 18. Not only is this a concession that the Petition was deficient under Ground 1, it is another conclusory statement made without articulating a rationale for how or specifically why (other than efficiency's sake) the combination would have been made. In the Reply, as in the Petition, Petitioner cites paragraph 111 of the First Drewry Declaration as support — but the witness's testimony merely parrots the Petition's mistakes. *See id.* (citing Ex. 1017 ¶ 111). Petitioner also cites paragraph 48 of the Second Drewry Declaration, but this merely makes the same conclusory assertions about Petitioner's *new* argument (which is too late, as it was not presented in the Petition—*see, e.g.*, CTPG at 73)[16] about merging Compton's broach and drill in view of Donner. *See id.* (citing Ex. 1022 ¶ 48).

Petitioner's assertions under Ground 1, specifically as to exactly how the features of Donner and/or Otte would be combined with Compton, and

[16] CTPG refers to the Board's Consolidated Trial Practice Guide, 84 Fed. Reg. 64,280 (Nov. 21, 2019), available at www.uspto.gov/TrialPracticeGuideConsolidated.

also why Sharma's teachings might be added at all, are improperly "focused on what a skilled artisan would have been able to do, rather than what a skilled artisan would have been motivated to do at the time of the invention." *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1068–69 (Fed. Cir. 2018). Such a focus presents a danger of introducing improper hindsight bias into an obviousness allegation and analysis. A petitioner cannot satisfy its burden of proving obviousness by employing "mere conclusory statements" as Petitioner has done here, but "must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

In summary, we find that the Petition lacks sufficient explanation and support for exactly *why* and *how* Compton, Donner, Otte, and Sharma would have been combined by the person of ordinary skill in the art to achieve the invention defined by claims 1, 2, 9, and 10. Therefore, we conclude Petitioner has not met its burden under Ground 1 to prove the claims unpatentable.

2. Grounds 2–5 — Asserted Obviousness of Claims 1, 2, 9, and 10 Relying on Martz

Grounds 2–5 are also premised on theories of obviousness. Under Ground 2, Petitioner replaces Ground 1's Donner and Otte with Schifano and Martz while continuing to rely on the same teachings in Compton and Sharma. *Id.* at 60–69 (citing Ex. 1003, Abstract, 3:15–21, 4:56–67, 9:52–19:16, 15:15–19, 15:21–34, 18:52–19:16, 19:40–20:2, 20:3–20, 35:45–47, 35:53–61; Ex. 1004, 1:11–16, 2:51–60, 3:52–65, 7:4–15; Ex. 1008, Abstract, ¶¶ 2, 25, 93–95, 305–306; Ex. 1009, 1:5–8; Ex. 1017 ¶¶ 131–136). Under Ground 3, Petitioner presents a similar case as for Ground 2, but cites

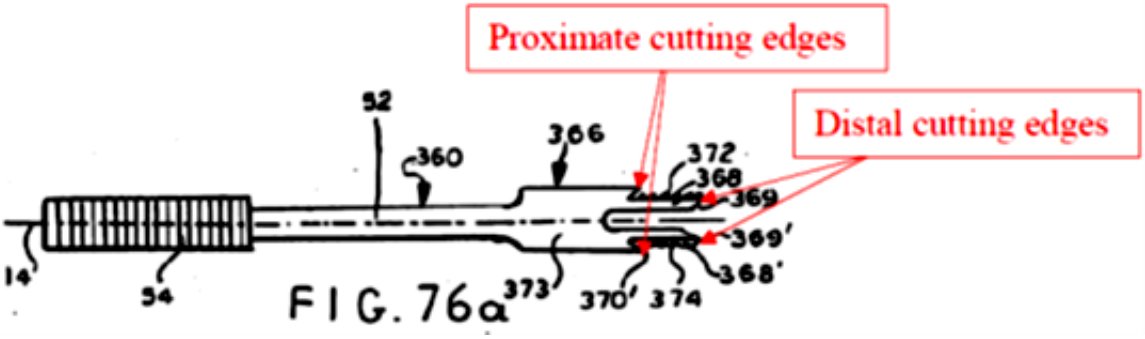
Compton in place of Schifano in the prior art combination with Martz and Sharma. *Id.* at 69–73 (citing Ex. 1004, 7:61–8:13, 8:24–28; Ex. 1008 ¶¶ 2, 25, 93, 305–306; Ex. 1017 ¶¶ 153–154, 156, 163, 165). Ground 4 is similar to Grounds 2 and 3, but adds Black to replace either Compton or Schifano, and still relies on Martz and Sharma. Pet. 73–81 (citing Ex. 1005, Abstract, ¶¶ 19, 38–39, 45–50, 52, 66, 71–73, 75–77, 80, 93, 109; Ex. 1006 ¶ 145; Ex. 1008 ¶¶ 2, 25, 93, 305–306; Ex. 1017 ¶¶ 169–171, 175, 182, 184). Under Ground 5, Petitioner presents the same case as for Ground 4, but also cites Donner as part the prior art combination with Black, Sharma, and Martz. *Id.* at 81–85 (citing Ex. 1006 ¶ 145; Ex. 1017 ¶¶ 188, 201).

There are differences in the prior art combinations and asserted rationales for obviousness under Grounds 2–5; however, each of these grounds commonly relies on Martz's disclosure of a "box chisel tool," illustrated at Martz's Figures 76a–76c and described at paragraphs 93 and 305–306, to teach the claimed "abrading device" with "opposing" "abrading surfaces," and "an open tip" with a "a cutting edge," which must be "configured to cut bone tissue in the sacroiliac joint," as recited by claim 1.[17] *See* Pet. 66–67, 68, 69, 71–72, 74, 78–80, 82–85; *see also* Reply 23–25 (arguing that Martz teaches a cutting edge as claimed, *if* the ordinarily skilled artisan uses their imagination).

This commonality presents an outcome-determinative problem for these grounds of the Petition.

[17] Ground 5 adds Donner's disclosure to the prior art combination otherwise including Black, Martz, and Sharma, but Ground 5 does not assert that the claimed "abrading device" or "open tip" or "cutting edge" are taught by Donner under this ground. Pet. 81–85. Rather, Ground 5 relies on Martz for teaching an open tip and cutting edge. *Id.* at 83–85.

Patent Owner argues "Grounds 2-5 fail because Martz does not teach or suggest the limitation 'a cutting edge disposed at a leading edge of the open tip, the cutting edge configured to cut bone tissue in the sacroiliac joint.'" Resp. 44. Patent Owner correctly identifies that Grounds 2–5 all rely on "Martz's chisel tool depicted in Figures 76a–76c" for teaching this claim limitation and Patent Owner argues that this embodiment of Martz actually discloses that the tool has two sets of cutting edges: edges 369 and 369' that are distal and at the leading edge of the tool; and cutting edges 370 and 370' that are more proximal and not at the leading edge of the tool. *Id.* at 44–45. Patent Owner provides the following annotated Figure 76a of Martz, illustrating this, which we reproduce below:



The image above is Figure 76a of Martz, also reproduced above at page 47, but annotated with red arrows and a box with text, stating and pointing to the "Proximate cutting edges" (features 370 and 370'); and a second red box and arrows with text, stating and pointing to the "Distal cutting edges" (features 369 and 369').

Patent Owner argues, quoting from the reference, that "Martz teaches that the distal cutting edges are configured to 'cut disc material from adjacent vertebrae while guiding the proximate cutting edges to meet and cut from adjacent vertebrae.'" *Id.* at 45 (citing Ex. 1008 ¶ 304). This quote

applies most directly to a related embodiment where the distal cutting edges in question are labeled 345 and 345', however, the following paragraph 305 of Martz explains that the embodiment shown in the Figure 76a above "is similar" to that related embodiment (and the more directly-related paragraphs do not provide a more detailed relevant description). Ex. 1008 ¶¶ 304–305.

Patent Owner argues that the Petition's reliance on Martz to teach the claimed "open tip comprising a cutting edge disposed at a leading edge of the open tip, the cutting edge configured to cut bone tissue in the sacroiliac joint" fails because the cutting edge of Martz's open tip is not so configured, but is only disclosed as configured to remove cartilage (or disc material), while other features cut bone. Resp. 48.

We agree with Patent Owner. Martz does not expressly teach "an open tip comprising a cutting edge disposed at a leading edge of the open tip, the cutting edge configured to cut bone tissue in the sacroiliac joint," the claim element for which it is cited. The Petition fails to explain, in the absence of any express teaching, why the ordinarily skilled artisan would have understood Martz to teach this claim element, particularly in view of the fact that the tool is not described as used in a way where it might function in this way—it cuts vertebral disc material with its tip and vertebral bone with its side edges. *See* Ex. 1008 ¶¶ 304–306.

Petitioner was directly questioned on this at the final hearing. Hr'g Tr. 19:22–20:11 ("So, that open tip and that cutting edge of Martz at the leading edge of the open tip, which is what matters per the claim, Martz says that that doesn't cut bone, but says that that cuts disc tissue. And then that rasping surface that's immediately adjacent to it can cut bone, according to

paragraph 306. So, how do you, what's your response to that? Like why would that be -- what is it? Is it made of a different material that couldn't cut bone? Is it not shaped correctly to cut bone? What is your argument about Martz being suitable for cutting bone with that tip?"). *Id.* at 20:12–22. In response, Petitioner conceded that Martz "doesn't expressly say" the material at the tip of its tool is capable of cutting bone and "that the leading edge of 368 and 368 prime [(the arms terminating in edges 369 and 369')] can't cut bone," but that "[t]hat doesn't mean it can't cut bone." *Id.* at 20:12–22. Petitioner conceded, "[i]s it sharp enough to cut bone at the very tip? It doesn't say yes or no in Martz." *Id.* at 21:3–5. And, as somewhat of a conclusion, Petitioner stated, "[n]ow, can you take Martz and apply it directly [to other prior art, e.g., Schifano,] without any modification whatsoever? It doesn't expressly say that in Martz. It doesn't say that cutting edges don't cut bone. But ***it doesn't say that they do***." *Id.* at 47:7–10 (emphasis added).

Thus, we are left with the fact that Martz fails to expressly teach the claim element for which it is cited. Searching Mr. Drewry's testimony on Martz, we find it fails to sufficiently explain that Martz's tool has the claimed leading edge configured to cut bone, other than Mr. Drewry's assertion that Martz's spinal fusion chisel tool *could* be used for SI joint preparation and the bone/joint surfaces are similar in the two anatomical features. *See* Ex. 1017 ¶¶ 133–135, 146, 149, 154, 156, 162, 170, 180, 184, 189, 196; *see also* Ex. 1022 ¶¶ 62–65 (Mr. Drewry testifies that an ordinarily skilled artisan might *imagine* applying Martz's chisel in a modified form, without providing an explanation as to what modifications were required and

without explaining how Martz's tool's tip is or would have been configured to cut bone).

Petitioner's Reply also fails to persuasively explain the discrepancy between Martz's express teachings and why it is cited in the Petition. *See* Reply 23–25. Petitioner relies on the proposition that the person of ordinary skill in the art might *imagine* using Martz's tool in the way claimed. *Id.* at 23–24. We recognize that *KSR* instructs that the ordinarily skilled artisan is creative and not an automaton, but this is a step too far. The best argument Petitioner makes is that rasping surfaces, e.g., feature 372 of Figure 76a above, which are immediately proximal to the distal edges 369 and 369', scrape bone. *Id.* at 24. We are not persuaded by this argument because those rasping surfaces are not the Martz feature (i.e., edges 369 and 369') relied upon in the Petition for the disputed claim limitation.

In summary, we find that the Petition lacks sufficient explanation and support under Grounds 2–5 for how any of these asserted prior art combinations would have achieved or rendered obvious the invention defined by claims 1, 2, 9, and 10. Therefore, we conclude Petitioner has not met its burden under Grounds 2–5 to prove the claims unpatentable.

III. CONCLUSION

Petitioner has failed to show by a preponderance of the evidence that claims 1, 2, 9, and 10 of the '129 patent are unpatentable over the cited prior art. Our decision derives from our review of the entire record before us and

the arguments presented by the parties. Our final decision is summarized as follows:

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 2, 9, 10	103	Compton, Donner, Otte, Sharma		1, 2, 9, 10
1, 2, 9, 10	103	Schifano, Compton, Martz, Sharma		1, 2, 9, 10
1, 2, 9, 10	103	Compton, Martz, Sharma		1, 2, 9, 10
1, 2, 9, 10	103	Black, Martz, Sharma		1, 2, 9, 10
1, 2, 9, 10	103	Black, Donner, Martz, Sharma		1, 2, 9, 10
Overall Outcome				1, 2, 9, 10

ORDER

Accordingly, it is hereby:

ORDERED that, Petitioner has not proven by a preponderance of the evidence that claims 1, 2, 9, 10 of the '129 patent are unpatentable; and

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

For PETITIONER:

William K. Nelson
Mark D. Miller
SIERRA IP LAW, PC
wnelson@sierraiplaw.com
mmiller@sierraiplaw.com

For PATENT OWNER:

Stephen E. Kelley
Adnriy Lytvyn
Thomas J. Banks
HILL WARD HENDERSON, P.A.
Stephen.Kelly@hwhlaw.com
Andriy.Lytvyn@hwhlaw.com
Thomas.Banks@hwhlaw.com