

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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LIFE SPINE, INC.,  
Petitioner,

v.

GLOBUS MEDICAL, INC.,  
Patent Owner.

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IPR2022-01602  
Patent 9,956,087 B2

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Before KRISTI L. R. SAWERT, CYNTHIA M. HARDMAN, and  
MICHAEL A. VALEK, *Administrative Patent Judges*.

SAWERT, *Administrative Patent Judge*.

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

## I. INTRODUCTION

Petitioner Life Spine, Inc. requests *inter partes* review of claims 1–14 of U.S. Patent No. 9,956,087 B2 (“the ’087 patent,” Ex. 1001). Paper 2 (“Pet.”).<sup>1</sup> Patent Owner Globus Medical, Inc. did not file a Preliminary Response.

We have authority under 35 U.S.C. § 314 to determine whether to institute an *inter partes* review. The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted unless “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” The Supreme Court has held that the Board, in a decision to institute under 35 U.S.C. § 314(b), may not institute review on fewer than all claims challenged in the petition. *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1355–56 (2018). Moreover, if the Board institutes trial, it will institute as to all claims challenged in the petition and on all grounds in the petition. 37 C.F.R. § 42.108(a); *see also PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (interpreting the statute to require “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”).

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<sup>1</sup> The Board observes that Petitioner deletes spacing between words, in an apparent effort to circumvent our word count limits. For example, Petitioner uses “EX1001,” instead of “Ex. 1001.” *See, e.g.*, Pet. 1. Petitioner is cautioned that continuing this practice may lead to a party’s brief not being considered.

Applying that standard, and upon consideration of the information presented in the Petition and associated evidence, we grant the Petition and institute an *inter partes* review.

The following preliminary findings of fact and conclusions of law are made solely for determining whether to institute review. Any final decision will be based on the full trial record.

*A. Real Parties in Interest*

Petitioner and Patent Owner each identify themselves as the real party in interest. Pet. 1; Paper 5 (Patent Owner’s Updated Mandatory Notices), 2.

*B. Related Matters*

The parties identify *Globus Medical, Inc. v. Life Spine, Inc.*, 1:21-cv-01445 (D. Del.), as involving the ’087 patent. Pet. 1; Paper 5, 2. The parties also identify a number of patent applications related to the ’087 patent, including 17/157,099, 17/477,597, 17/478,213, and 17/715,461. Pet. 2; Paper 5, 2. Petitioner identifies a number of related *inter partes* review proceedings, i.e., IPR2022-01434, IPR2022-01435, and IPR2022-01601. Paper 5, 2.

*C. The ’087 patent (Ex. 1001)*

The ’087 patent, titled “Intervertebral Spacer and Plate,” relates to a spinal implant comprising an intervertebral spacer and a plate member. Ex. 1001, codes (54), (57). The Specification describes exemplary spinal implants for installing in an intervertebral disc space to facilitate intervertebral fusion and/or stabilization. *Id.*, code (57). One exemplary device is depicted in Figure 12A, reproduced below.

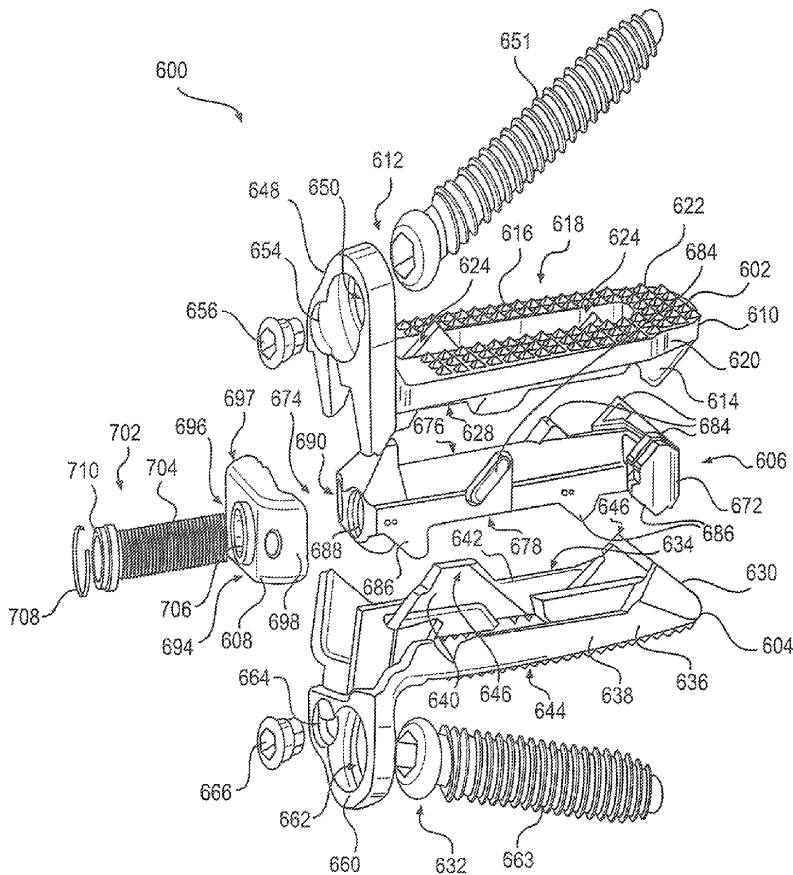


**FIG. 12A**

Figure 12A of the '087 patent is an exploded view of a vertebral fusion device 600. *Id.* at 3:60–61, 28:4–6. The vertebral fusion device 600 may include a first (e.g., upper and/or superior) endplate 602, a second (e.g., lower and/or inferior) endplate 604, a first ramped body 606, and a second ramped body 608. *Id.* at 28:18–22.

As shown in Figure 12A, the first endplate 602 has an upper surface 622 that “can include a plurality of protrusions (e.g., bumps, teeth, and/or peaks) configured to engage a vertebral body.” *Id.* at 28:40–43. The first endplate 602 may also include first extension portion 648, that “can extend, e.g., vertically, from the second end 612 of the body portion of the first endplate 602.” *Id.* at 28:54–57. The first extension portion 648 may have a

bore 650 configured to receive a fastener 651. *Id.* at 29:7–10. The '087 patent lists an anchor as an exemplary fastener. *Id.* at 6:47–49.

The '087 patent states that the first and second endplates “may be configured to engage (e.g., mate with) the first ramped body 606.” *Id.* at 30:58–60. Mating features between the endplates and the first ramped body are illustrated in Figure 12B, reproduced below.

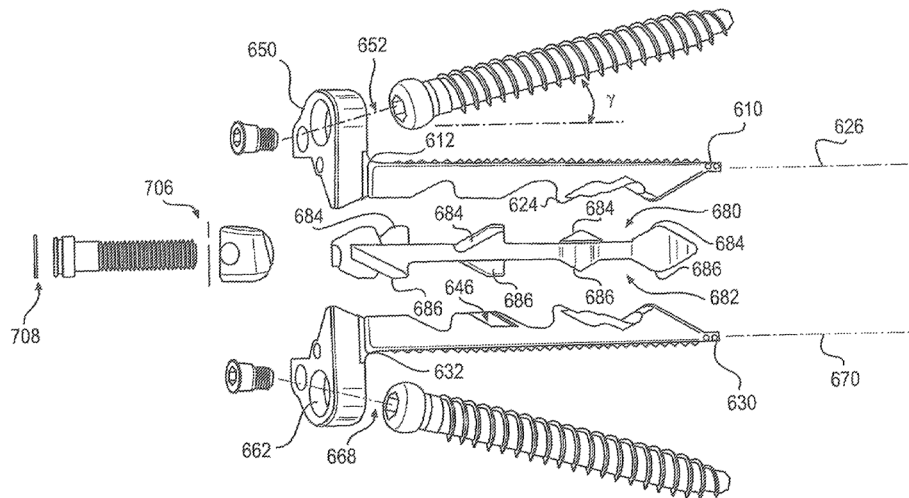


**FIG. 12B**

Figure 12B of the '087 patent is an exploded view of a vertebral fusion device 600. *Id.* at 3:60–61, 28:4–6. The endplates have one or more mating features 624, 646 shaped to engage with corresponding mating features 684, 686 on the first ramped body. *Id.* at 28:44–45, 29:48–49, 31:9–15.

Turning back to Figure 12A, the first ramped body 606 also includes a bore 688 configured to engage with the threaded member 704 of actuator 702. *Id.* at 31:64–32:3. The '087 patent states that the spinal device can be expanded by “applying a rotational force to the threaded member 704 to threadably engage the first ramped body 606.” *Id.* at 34:29–31. “[A]s the threaded member 704 is rotated in a first direction, the threaded member 704 may pull the first ramped body 606 towards the second ramped body 608.”

*Id.* at 34:34–36. And, “[a]s the first ramped body 606 moves towards the second ramped body 608, the mating features on the first ramped body 606 may engage the mating features on the first and/or second endplates 602, 604, thereby pushing (e.g., wedging) the first and second endplates 602, 604 apart.” *Id.* at 34:36–41.

Another embodiment of the expandable fusion device of the ’087 patent is shown in Figure 21, reproduced below. *Id.* at 4:25–27.

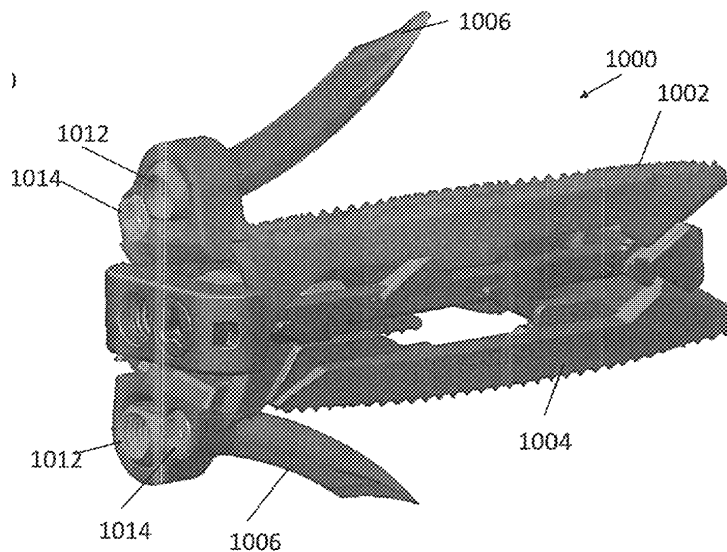


**FIG. 21**

Figure 21 of the ’087 patent depicts expandable fusion device 100 including first endplate 1002 and second endplate 1004, and one or more anchors 1006. *Id.* at 48:39–41, 55–56. The ’087 patent states that the anchors 1006 are used as fasteners to attach the fusion device to the patient. *Id.* at 48:56–59. Specifically, the anchors “pass through an adapter, such as socket or bore 1012 within device 1000, and into body tissue of the patient.” *Id.* at 49:26–29.

*D. Challenged Claims*

Petitioner challenges all 14 claims of the '087 patent. Claims 1 and 8 are independent. Claim 1, reproduced below with bracketed and bolded numerals added,<sup>2</sup> is illustrative:

1. **[i]** A surgical system comprising:

**[ii]** an implant comprising:

**[iii]** a first endplate, wherein the first endplate comprises a planar portion with protrusions and an extension portion;

**[iv]** a second endplate;

**[v]** a first ramped body extending between the first endplate and the second endplate, wherein the first ramped body comprises at least one upwardly facing ramp engaging the first endplate and at least one downwardly facing ramp engaging the second endplate;

**[vi]** an actuator in engagement with the first ramped body, **[vii]** wherein rotation of the actuator causes translation of the first ramped body, thereby causing expansion of the implant; and

**[viii]** a first socket formed through the extension portion of the first endplate, wherein the first socket extends completely above the planar portion of the first endplate; and

**[ix]** a first anchor configured to fasten the implant to the patient, wherein the anchor is received in the first socket.

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<sup>2</sup> For ease of reference, we use the same bracketed lettering Petitioner uses in the Petition. *See* Pet. 15–27.

Ex. 1001, 50:42–65.

Challenged independent claim 8 is identical to claim 1, except that it does not recite that “the first ramped body comprises at least one upwardly facing ramp engaging the first endplate and at least one downwardly facing ramp engaging the second endplate.” *Compare id.* (claim 1), *with id.* at 51:18–52:7 (claim 8). Challenged claims 2–7 depend directly or indirectly from claim 1 and recite additional features, including with respect to endplates (claims 2, 6, and 7) and anchors (claims 3–5). *Id.* at 50:66–51:17. Challenged claims 9–14 depend directly or indirectly from claim 8 and recite the same additional features relating to the endplates (claims 9, 13, and 14) and anchors (claims 10–12). *Id.* at 52:8–28.

*E. Evidence*

Petitioner submits evidence including:

| <b>Evidence</b>                                                                               | <b>Exhibit No.</b> |
|-----------------------------------------------------------------------------------------------|--------------------|
| Declaration of Troy D. Drewry                                                                 | 1002               |
| Weiman et al., U.S. Patent Pub. 2014/0067071 A1<br>(published Mar. 6, 2014) (“Weiman”)        | 1004               |
| Mozeleski et al., Intl. Pub. No. WO 2015/009793 A1<br>(published Jan. 22, 2015) (“Mozeleski”) | 1006               |
| Seifert et al., U.S. Patent Pub. 2014/0163683 A1<br>(published June 12, 2014) (“Seifert”)     | 1010               |

*F. Asserted Grounds of Unpatentability*

Petitioner asserts that claims 1–14 are unpatentable on the following grounds:

| <b>Claim(s)<br/>Challenged</b> | <b>35 U.S.C. §</b> | <b>Reference(s)/Basis</b>      |
|--------------------------------|--------------------|--------------------------------|
| 1–3, 8–10                      | 102/103            | Weiman                         |
| 4–7, 11–14                     | 103                | Weiman and Mozeleski           |
| 7, 14                          | 103                | Weiman, Mozeleski, and Seifert |
| 1–3, 8–10                      | 102/103            | Seifert                        |
| 4–7, 11–14                     | 103                | Seifert and Mozeleski          |
| 7, 14                          | 103                | Seifert, Mozeleski, and Weiman |

Pet. 4.

II. ANALYSIS

*A. Principles of Law*

In an *inter partes* review, “the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic 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”)). Petitioner ultimately bears the burden of persuasion to prove unpatentability of each challenged claim by a preponderance of the evidence. 35 U.S.C. § 316(e). This burden never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). The Board may authorize an *inter partes* review if we determine that the information presented in the Petition and any Patent Owner Preliminary Response shows that there is a reasonable likelihood that Petitioner will prevail with respect to at least one of the claims challenged in the petition. 35 U.S.C. § 314(a).

Anticipation under 35 U.S.C. § 102 requires that a prior art reference set forth each and every element of a claim as set forth in the claim.

*Verdegaal Bros. v. Union Oil Co.*, 814 F.2d 628, 631 (Fed. Cir. 1987); *see also Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008) (anticipation not only requires that each element of a claim be present in a prior art reference, but also the arrangement or combination of those elements as claimed).

A claim is unpatentable as obvious under 35 U.S.C. § 103 if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. 35 U.S.C. § 103 (2012); *see also KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved based on underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) any objective indicia of nonobviousness.<sup>3</sup> *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). An obviousness determination requires finding a reason to combine accompanied by a reasonable expectation of achieving what is claimed in the challenged patent. *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367 (Fed. Cir. 2016). “[A]ny need or problem known in the field of endeavor at

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<sup>3</sup> As noted above, Patent Owner did not file a Preliminary Response and thus does not presently assert objective indicia supporting non-obviousness of the challenged claims.

the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *KSR*, 550 U.S. at 419–20.

*B. Level of Ordinary Skill in the Art*

We consider the grounds of unpatentability in view of the understanding of a person of ordinary skill in the art at the time of the invention. *Graham*, 383 U.S. at 17–18. Petitioner contends that a person of ordinary skill in the art (sometimes abbreviated herein as “POSITA”):

would have had at least a Bachelor’s Degree in mechanical engineering or biomedical engineering and two or more years of experience in biomechanical engineering, biomedical engineering, and/or spinal implant devices. A person could also have qualified as a POSITA with some combination of more formal education (e.g., an M.D.) and less technical experience or less formal education and more technical or professional experience in the foregoing fields. Superior education could compensate for a deficiency in work experience, and vice-versa.

Pet. 11 (citing Ex. 1002 ¶¶ 76–79).

Because Petitioner’s proposed level of ordinary skill in the art appears to be consistent with the cited prior art and is undisputed on this record, we adopt it for purposes of this Decision. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (indicating that the prior art itself may reflect an appropriate skill level).

*C. Claim Construction*

In AIA proceedings we interpret a claim “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b). Under this standard, we construe the claim “in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in

the art and the prosecution history pertaining to the patent.” *Id.*; *see also Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–19 (Fed. Cir. 2005) (en banc).

Petitioner asserts that “no terms require constructions differing from their plain and ordinary meaning.” Pet. 12. We determine that no claim terms require express construction for this Decision. Any final written decision entered in this case may include a final claim construction based on the full trial record that differs from any discussion of claim scope provided in our analysis below.

#### *D. Overview of Asserted Prior Art*

Before turning to Petitioner’s asserted grounds of unpatentability, we provide a brief summary of the asserted references.

##### *1. Weiman (Ex. 1004)*

Weiman, titled “Expandable Fusion Device and Method of Installation Thereof,” relates to “an expandable fusion device capable of being installed inside an intervertebral disc space to maintain normal disc spacing and restore spinal stability.” Ex. 1004, codes (54), (57). One exemplary device is depicted in Figure 78, reproduced below.

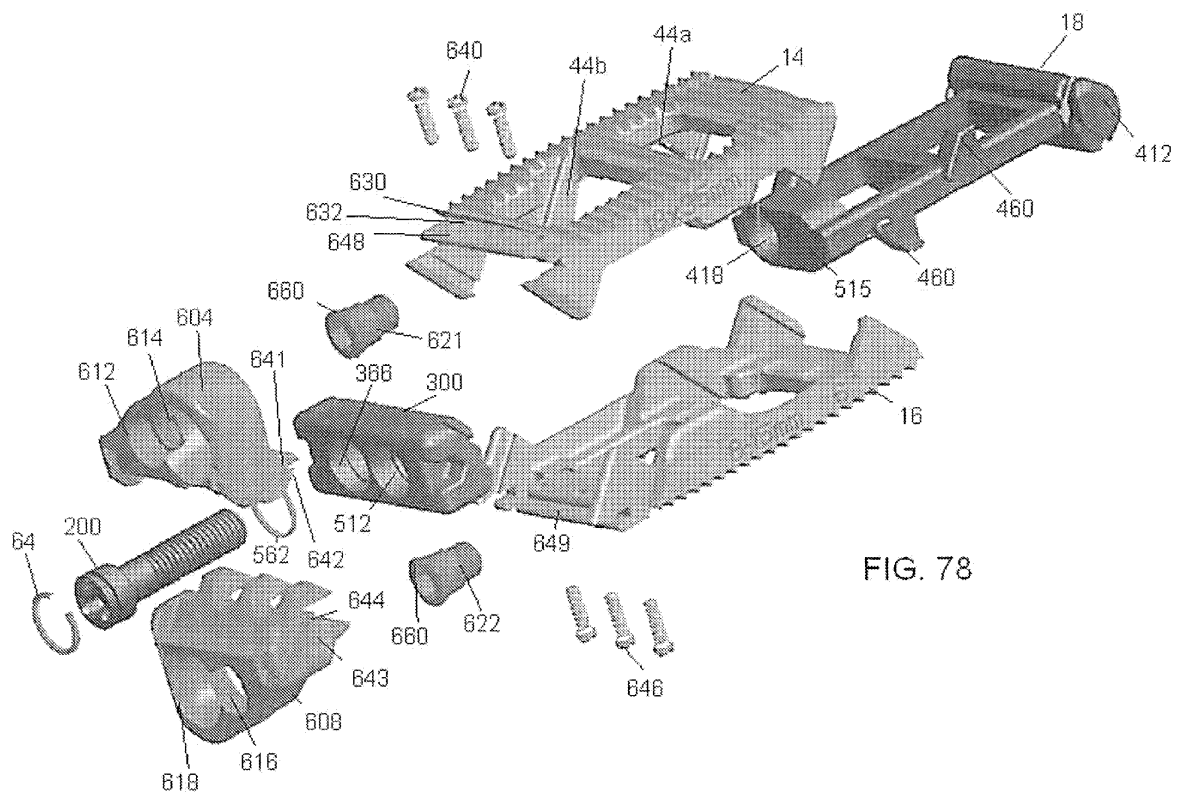


Figure 78 of Weiman is an exploded view of expandable fusion device 10. *Id.* ¶ 187. Weiman states that the “fusion device 10 shares many similar features with prior embodiments, including a first endplate 14, a second endplate 16, a central ramp 18 with ramped surfaces 460, a driving ramp 300 and an actuator assembly 200.” *Id.* Weiman also states that “the fusion device 10 in FIG. 78 also includes additional features, including an upper plate member 604 and a lower plate member 608 that can be removably attached to the first endplate 14 and second endplate 16, respectively.” *Id.*

Figure 80 of Weiman is reproduced below.

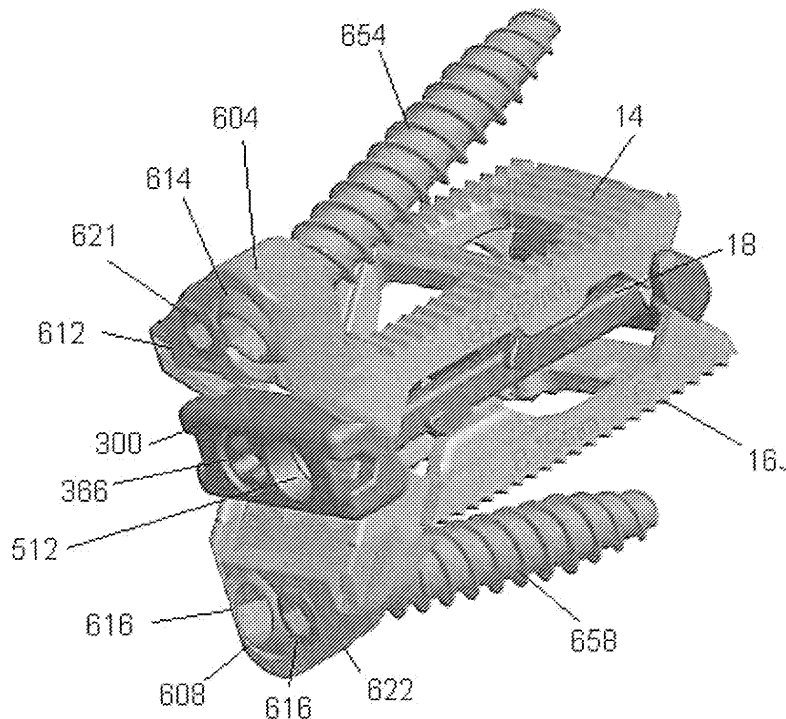


FIG. 80

Figure 80 of Weiman illustrates “a top perspective view of the fusion device 10 of FIG. 78 in an expanded state.” *Id.* ¶ 196. As to Figure 80, Weiman states that “the expansion of the first endplate 14 away from the second endplate 16 also causes expansion of the upper plate member 604 away from the lower plate member 608.” *Id.*

## 2. *Mozeleski (Ex. 1006)*

Mozeleski, titled “Modular Intervertebral Cage System,” relates to devices for spinal disc replacement comprising a plate configured to couple to an intervertebral cage. Ex. 1006, codes (54), (57). Figure 1 of Mozeleski is reproduced below.

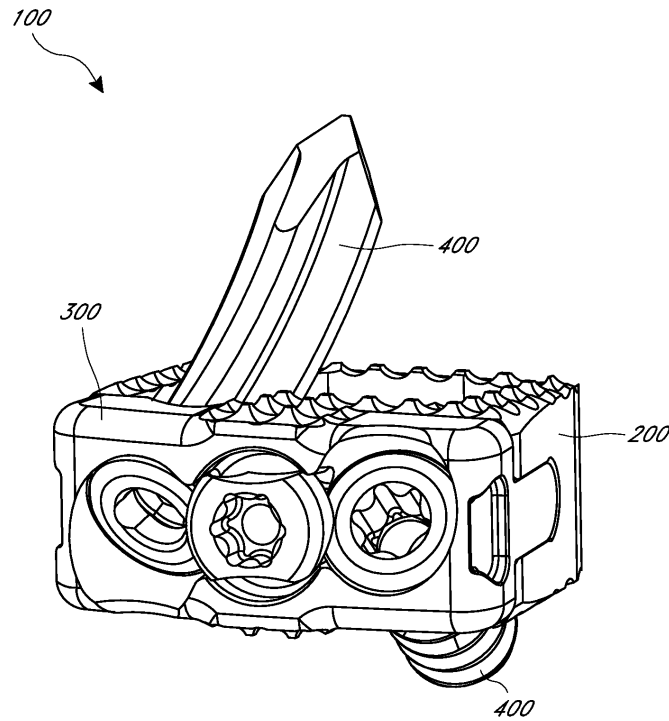


*FIG. 1*

Figure 1 of Mozeleski is a perspective view of modular cage system 100 in an unexpanded state. *Id.* ¶ 32. Modular cage system 100 comprises an intervertebral cage 200, plate 300, and bone fixation members 400. *Id.* ¶¶ 58–59. Mozeleski states that the “plurality of bone fixation members 400 [are] adapted to anchor the modular cage system 100 in an intervertebral space between two vertebrae of a patient” by “pass[ing] through the plate 300” and “engag[ing] the adjacent vertebrae.” *Id.* ¶ 59.

Figure 6B of Mozeleski is reproduced below.

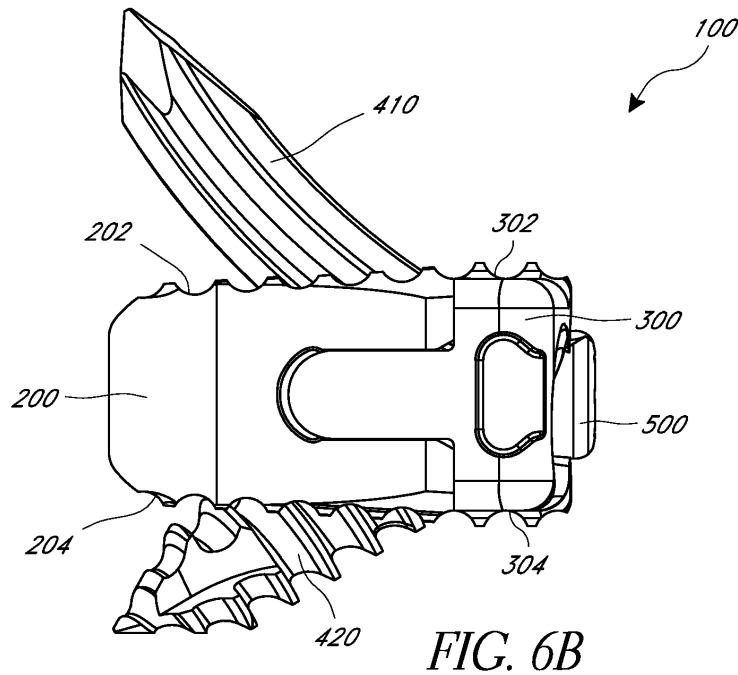


Figure 6B of Mozeleski is a side view of the modular cage system of Figure 1. *Id.* ¶ 38. Mozeleski states that the bone fixation members 400 illustrated in Figure 6B are bone screws 420 and bone blades 410. *Id.* ¶ 74. Mozeleski states that bone screws 420 “are generally limited to a straight configuration without any bends or curves,” whereas “[i]n some embodiments, bone blades 410 are curved, allowing the bone blade 410 to engage a vertebra in a different manner and orientation than a bone screw 420.” *Id.*

### 3. Seifert (Ex. 1010)

Seifert, titled “Expandable Vertebral Implant,” relates to “an intervertebral spacer that is adjustable in height with plates for fixation.” Ex. 1010, code (54), ¶ 2.

Seifert's Figure 1 is reproduced below.

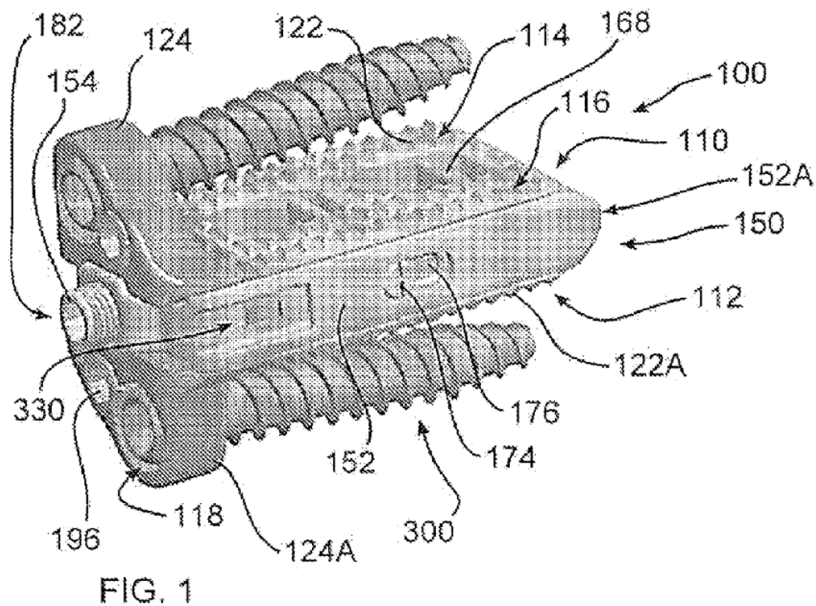


Figure 1 is a perspective view of an expandable vertebral implant according to Seifert in a collapsed position. *Id.* ¶¶ 20, 79. As shown in Figure 1, the expandable vertebral implant comprises spacer 100 having two separable endplates 110, 112. *Id.* ¶ 80. The endplates have a surface 114 “with teeth or other projections 116 which can penetrate body tissue to reduce a likelihood of migration of the spacer 100 after implantation.” *Id.* Seifert states that the “[s]pacer 100 is further secured with one or more fasteners, such as bone screws 300, which pass through an adapter, such as bone screw socket 118 within spacer 100, and into body tissue of the patient.” *Id.*

Seifert's Figure 50 is reproduced below.

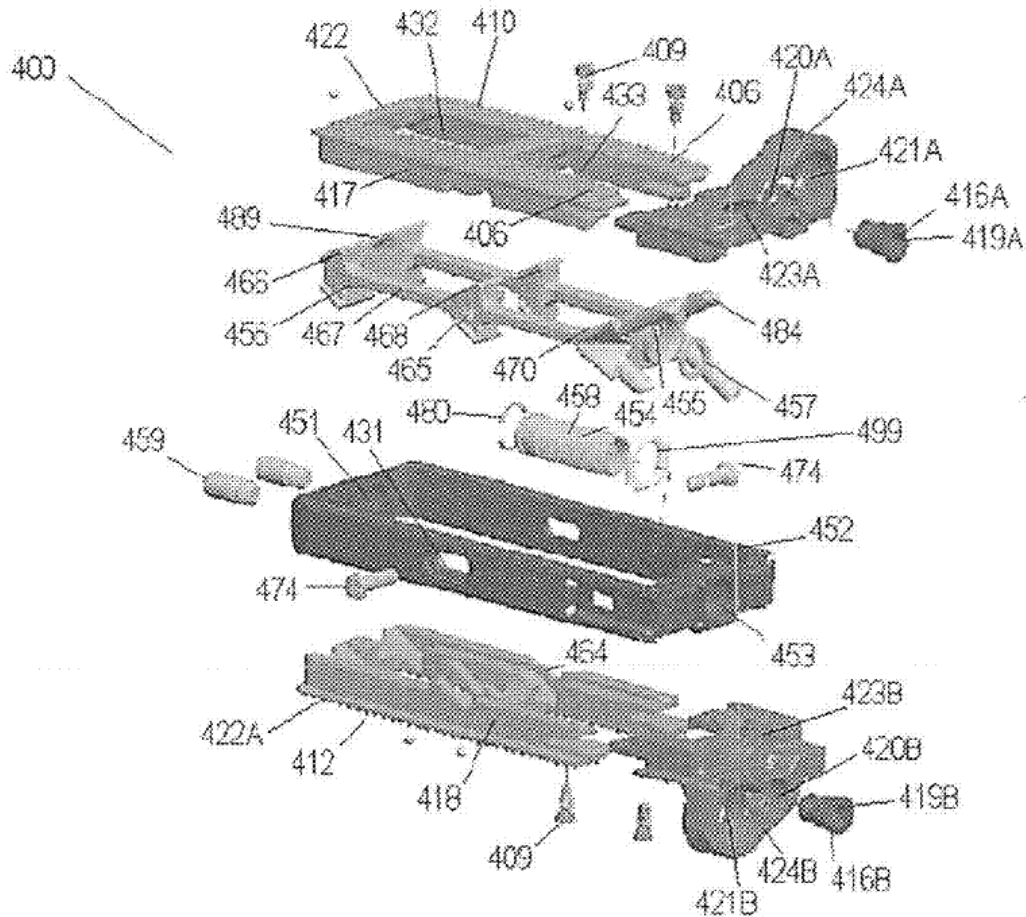


FIG. 50

Figure 50 of Seifert illustrates an exploded view of an expandable vertebral implant 400. *Id.* ¶ 70. As shown in Figure 50, the implant 400 includes a “spacer portion 422 and a fixation portion or plate portion 424.” *Id.* ¶ 133. The spacer portion 422 includes “a frame or body 452 for receiving a carriage or translation member 456 therein, an upper endplate 410, a lower endplate 412, and an actuator screw or member 454 for moving the translation member 456 to expand or contract the distance of separation between the endplates.” *Id.* Seifert states that the spacer portion 422 “is operably attached to at least one plate portion 424 comprising a bone screw

opening 421 for receiving a bone screw (not shown) for insertion into a bone member and a blocking screw opening 420 for receiving a blocking screw 419.” *Id.*

*E. Ground 1 – Alleged Anticipation by, or Obviousness Over, Weiman*

Petitioner contends that claims 1–3 and 8–10 are unpatentable as anticipated by, or obvious over, Weiman. Pet. 6–53. Having considered the arguments and evidence before us, we find that the record establishes a reasonable likelihood that Petitioner would prevail on this asserted ground of unpatentability.

*1. Independent Claim 1*

Taking claim 1 as illustrative, we are satisfied on this record that Petitioner establishes sufficiently for institution that Weiman discloses each and every limitation of the claim. *See* Pet. 15–27. As to the preamble<sup>4</sup>, we agree with Petitioner that Weiman discloses a “surgical system” (limitation i). Pet. 15 (citing Ex. 1004, code (57), Figs. 78–82, ¶ 187). In particular, we observe that both Weiman and the ’087 patent disclose that their respective devices may be used for the same surgical procedure—i.e., lumbar lateral interbody fusion procedure. *Compare* Ex. 1004 ¶ 188 (stating that “the fusion device 10 can be used in a lateral procedure, such as a lumbar lateral interbody fusion procedure”), *with* Ex. 1001, 4:60–65 (“disclosed herein are vertebral fusion devices that can include an interbody spacer and a plate configured for use in lateral lumbar interbody fusion (LLIF) procedures”).

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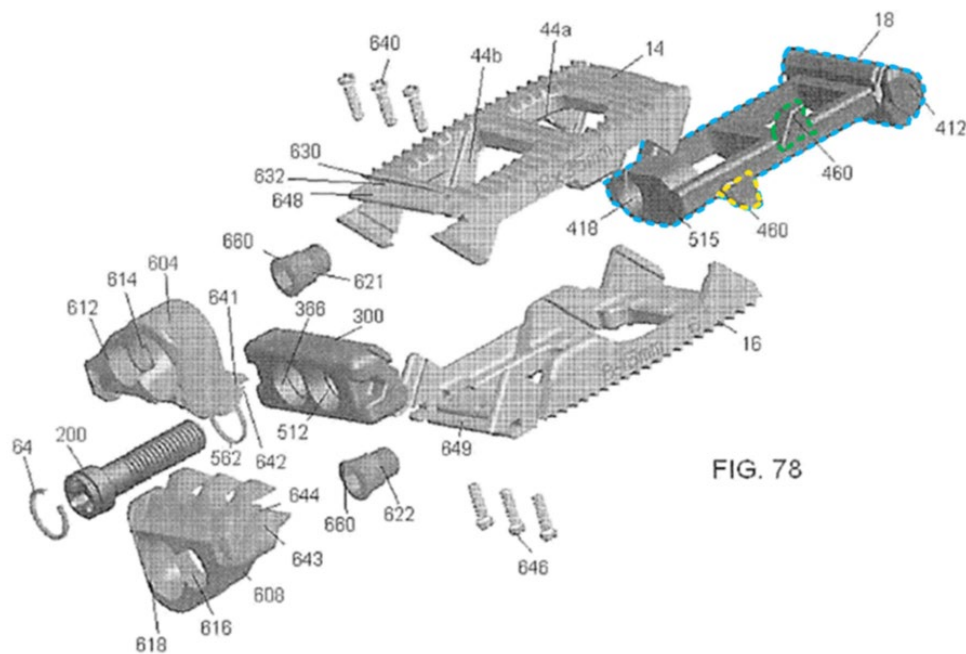
<sup>4</sup> Petitioner does not take a position on whether the preamble to claim 1 is limiting. Pet. 15. On this record, and at this stage of the proceeding, we accept Petitioner’s showing that the preamble is taught by Weiman, without deciding whether the preamble is limiting.

We also agree with Petitioner that Weiman discloses “an implant” (limitation ii). Pet. 17 (citing Ex. 1004 ¶¶ 89, 185, 188; Ex. 1002 ¶ 200). Specifically, Weiman refers to “the implant” or “implantation” of the disclosed expandable fusion device. *See, e.g.*, Ex. 1004 ¶¶ 89, 185.

Turning to the features of the implant recited in claim 1, we agree with Petitioner that Weiman discloses “a first endplate, wherein the first endplate comprises a planar portion with protrusions and an extension portion” (limitation [iii]) and “a second endplate” (limitation [iv]). *See* Pet. 17–19 (citing Ex. 1004 ¶¶ 91, 94, 127, 187, 189, Figs. 78–80; Ex. 1002 ¶¶ 201–210). Weiman discloses that the fusion device 10 has a “first endplate 14” and “second endplate 16.” Ex. 1004 ¶ 187. Weiman also discloses that the upper surface of the first endplate “is flat and generally planar,” *id.* ¶ 127, and, as shown in Figure 78, that the first endplate “can include surface texturing, such as teeth, ribbing, grooves and ridges that assist in preventing expulsion of the device in between vertebral members.” *Id.* ¶ 189. We agree with Petitioner on this record that this “surface texturing” satisfies the “protrusions” recited in limitation [iii] of claim 1. *See* Pet. 18 (citing Ex. 1004 ¶ 189; Ex. 1002 ¶ 203).

As to the claimed “extension portion” recited in limitation [iii], we agree with Petitioner on this record that Weiman’s “upper plate member 604” satisfies this limitation. *See* Pet. 18 (citing Ex. 1001, 28:61–63, 29:5–7; Ex. 1004 ¶ 187; Ex. 1002 ¶¶ 204–208). Specifically, Weiman discloses that “the fusion device 10 in FIG. 78 also includes additional features, including an upper plate member 604” that can be either “removably attached to the first endplate 14” or “fixedly attached such that it is not removable or detachable.” Ex. 1004 ¶ 187.

We also agree with Petitioner that Weiman discloses “a first ramped body extending between the first endplate and the second endplate, wherein the first ramped body comprises at least one upwardly facing ramp engaging the first endplate and at least one downwardly facing ramp engaging the second endplate” recited in limitation [v] of claim 1. *See* Pet. 19–21 (citing Ex. 1004 ¶¶ 186–187 193, Figs. 78–80; Ex. 1002 ¶¶ 95, 211–218, 273). We reproduce Figure 78 below with annotations added by Petitioner.



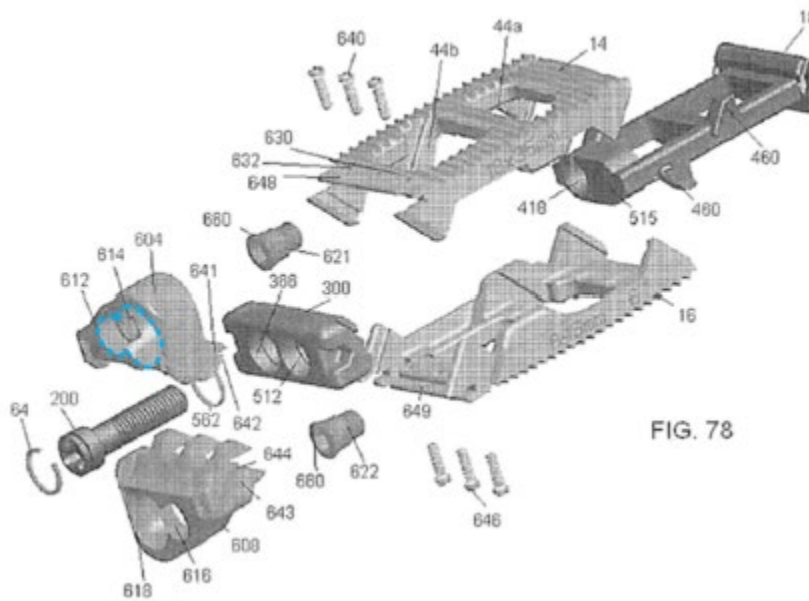
Pet. 20–21. In its annotated version of Weiman’s Figure 78, above, Petitioner highlights “central ramp 18” in blue, one of the “ramped surfaces 460” in green, and one of the “ramped surfaces 460” in yellow. *Id.* at 20–21. We agree with Petitioner on this record that an ordinarily skilled artisan would have understood that Weiman’s central ramp 18 is a “first ramped body extending between the first endplate and the second endplate,” that Weiman’s ramped portion 460 (highlighted in green) is an “upwardly facing ramp engaging the first endplate” 14, and that Weiman’s ramped portion 460

(highlighted in yellow) is a “downwardly facing ramp engaging the second endplate” 16, as recited in limitation [v] of claim 1. *See* Pet. 20–21 (citing Ex. 1002 ¶ 218). In particular, we note that Weiman discloses that the expandable fusion device may include “a central ramp 18 with ramped surfaces 460,” as shown in Figure 78. Ex. 2004 ¶ 187. And Weiman discloses “the interaction between the various ramps 460 of the central ramp 18 with the ramped surfaces of the adjacent endplates 14, 16.” *Id.* ¶ 186.

Turning to “actuator” limitations of claim 1, we agree with Petitioner on this record that Weiman discloses “an actuator in engagement with the first ramped body” (limitation [vi]), “wherein rotation of the actuator causes translation of the first ramped body, thereby causing expansion of the implant” (limitation [vii]). Pet. 21–23 (citing Ex. 1004 ¶¶ 125, 183, 187, 194, Fig. 78; Ex. 1002 ¶¶ 219–226). Specifically, Weiman discloses “an actuator assembly 200” that is “operably coupled to the central ramp 18.” Ex. 1004 ¶ 183. Weiman further discloses that “[t]he actuator assembly 200 can be used to increase or decrease the height of the fusion device 10,” *id.* ¶ 194, and that “the actuator assembly 200 functions, in an embodiment, to pull the central ramp 18 and the driving ramp 300 together, which forces apart the first and second endplates 14, 16,” *id.* ¶ 125. Taken together, we are persuaded on this record that an ordinarily skilled artisan “would have understood Weiman as teaching that rotation of the actuator assembly 200 causes translation of the central ramp 18, thereby causing expansion of the fusion device 10,” as Petitioner contends. Pet. 22 (citing Ex. 1002 ¶¶ 225–226).

Turning to the “socket” limitation of claim 1, we agree with Petitioner on this record that Weiman discloses “a first socket formed through the

extension portion of the first endplate, wherein the first socket extends completely above the planar portion of the first endplate” (limitation [viii]). Pet. 23–25 (citing Ex. 1004 ¶¶ 191, Figs. 78–80, 82A, 82B; Ex. 1002 ¶¶ 107–108, 227–230). We again reproduce Figure 78, below, with annotations added by Petitioner.



Pet. 23–24. In its annotated version of Weiman’s Figure 78, above, Petitioner identifies the “first opening 614 and second opening 612” in blue as the claimed “first socket.” *Id.* at 23 (citing Ex. 1002 ¶¶ 227–230). Petitioner contends that this “first socket” is formed through the “upper plate member 604” of the “first endplate 14,” and thus satisfies the claim language “a first socket formed through the extension portion of the first endplate.” *Id.* We agree with Petitioner.

As noted above, Weiman's "first endplate 14" and "upper plate member 604" satisfy the claimed "first endplate" and "extension portion," respectively. Weiman discloses that the "[u]pper plate member 604 comprises a first opening 614 for receiving a bone fastener 654 for inserting

into an upper vertebral member, and a second opening 612 for receiving a blocking set screw 621 for preventing back-out of the bone fastener 654 once the bone fastener 654 is inserted into upper plate member 604.”

Ex. 1004 ¶ 191. Because Weiman’s first and second openings receive fasteners/screws, we agree with Petitioner on this record that they constitute a “socket” as claimed in the ’087 patent. *See* Pet. 24 (citing Ex. 1002 ¶¶ 229–230); *see also* Ex. 1001, 49:26–29 (stating that “fasteners, such as anchors . . . pass through an adaptor, such as [a] socket”).

We also agree with Petitioner on this record that Weiman sufficiently shows that the first and second openings “extend[] completely above the planar portion of the first endplate” as recited in limitation [viii]. Pet. 24 (citing Ex. 1004, Figs. 78–80, 82A, 82B; Ex. 1002 ¶ 228). In this regard, Petitioner relies on, e.g., Figure 79, reproduced below.

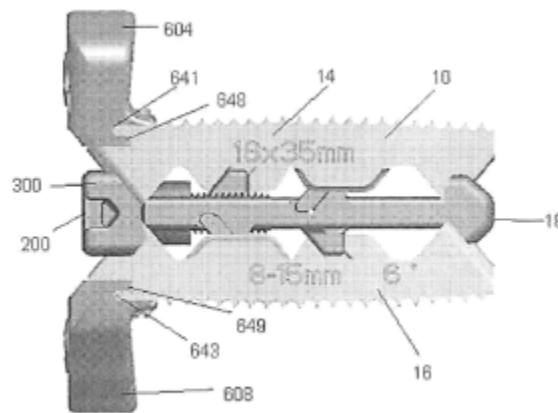


FIG. 79

Pet. 24. Figure 79, reproduced above, is a side view of Weiman’s expandable fusion device. Ex. 1004 ¶ 83. Mr. Drewry states, and we agree, that this illustration shows that the upper plate member 604 extends completely above the planar portion of the first endplate 14. Ex. 1002 ¶ 228. And, because the first opening 614 and second opening 612 are formed

through the upper plate member 604, we also agree with Mr. Drewry that the first opening 614 and second opening 612 also extend completely above the planar portion of the first endplate 14. *Id.*; *see also* Pet. 23–24.

We now turn to the final limitation (limitation [ix]) of claim 1, which recites “a first anchor configured to fasten the implant to the patient, wherein the anchor is received in the first socket.” We agree with Petitioner on this record that Weiman discloses the claimed anchor. Pet. 25–27 (citing Ex. 1004 ¶¶ 187, 191; Ex. 1002 ¶¶ 231–238; Ex. 1012, 54; Ex. 1018 ¶ 113, Ex. 1001, 48:56–59; Ex. 1020 ¶ 8, Fig. 1A).

As explained above, we agree with Petitioner that Weiman’s first and second openings 614, 612 in the upper plate member 604 constitute a “socket” as claimed in the ’087 patent. Weiman discloses that the first opening 614 “receiv[es] a bone fastener 654 for inserting into an upper vertebral member.” Ex. 1004 ¶ 191. Weiman does not specifically use the term “anchor,” but we agree with Petitioner on this record that an ordinarily skilled artisan would have readily understood that Weiman’s “bone fastener 654” is an “anchor” as claimed. Pet. 26 (citing Ex. 1002 ¶¶ 232–233). For example, during prosecution of the application leading to the ’087 patent, the Examiner identified screws as a type of anchor. Ex. 1012, 54 (identifying screw 342 of prior-art reference Ex. 1018 as an anchor). The written description of the ’087 patent itself also identifies “anchors 1006” as “fasteners.” *See* Ex. 1001, 48:56–59 (stating that “[a]nchors 1006 may be used as fasteners in order to attach device 1000 to the patient”). For these reasons, we agree with Petitioner on this record that Weiman sufficiently discloses “a first anchor configured to fasten the implant to the patient,

wherein the anchor is received in the first socket,” as recited in limitation [ix], even though Weiman does not specifically use the term “anchor.”

We also agree with Petitioner on this record that an “anchor” would have been an obvious substitution for Weiman’s “bone fastener 654.” Pet. 26 (citing Ex. 1020 ¶ 8, Fig. 1A; Ex. 1002 ¶¶ 234–238). The record at this stage of the proceeding supports Petitioner’s contention that ordinarily skilled artisans understood that “anchors” were known in the art as useful for attaching spinal implants to vertebrae. *See* Ex. 1002 ¶¶ 234–238. For example, prior-art reference Schoenly<sup>5</sup> discloses a “bone anchor 99a” configured to “provide locking fixation between the implant and the underlying bone.” Ex. 1020 ¶ 62. For these reasons, we determine that Petitioner has established sufficiently for institution that the Weiman discloses limitation [ix] of claim 1.

In summary, based on the record presently before us and the application of the reasonable likelihood standard, we are satisfied that Petitioner has shown sufficiently for institution that Weiman discloses each and every limitation of claim 1.

## *2. Independent claim 8*

As noted above, challenged independent claim 8 is identical to claim 1, except that it does not recite that “the first ramped body comprises at least one upwardly facing ramp engaging the first endplate and at least one downwardly facing ramp engaging the second endplate.” *Supra* § I.D. Claim 8, therefore, is broader in scope than claim 1. And having determined

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<sup>5</sup> Schoenly et al., WO 2012/121726 A1 (published Sept. 13, 2012) (“Schoenly”) (Ex. 1020).

that Petitioner has shown sufficiently for institution that Weiman discloses each and every limitation of claim 1, we also determine that Petitioner has shown sufficiently for institution that Weiman discloses each and every limitation of claim 8. *See* Pet. 28–30 (referring to its analysis of the same limitations in claim 1).

### *3. Summary for Ground 1*

In summary, based on the record before us and the application of the reasonable likelihood standard, we are satisfied that Petitioner has shown a reasonable likelihood that it would prevail in showing independent claims 1 and 8 unpatentable for anticipation by, or obviousness over, Weiman. Claims 2 and 3 depend, either directly or indirectly, on claim 1, and claims 9 and 10 depend, either directly or indirectly, on claim 8. We have reviewed Petitioner’s arguments and supporting evidence as to these claims, and find them sufficient for institution based on the current record. *See* Pet. 27–28, 30 (citing Ex. 1002 ¶¶ 187, 191; Ex. 1004 ¶¶ 227–242, 251–253). Thus, we also institute an *inter partes* review of dependent claims 2, 3, 9, and 10 on the same ground. *SAS*, 138 S. Ct. at 1355–56.

#### *F. Ground 2 – Alleged Obviousness Over Weiman and Mozeleski*

Petitioner contends that claims 4–7 and 11–14<sup>6</sup> are unpatentable as obvious over Weiman and Mozeleski. Pet. 30–43. Specifically, Petitioner contends that the combination of Weiman and Mozeleski teaches or suggests

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<sup>6</sup> Petitioner identifies Ground 2 as directed to claims “4–7 and 11–14” on page 4 of the Petition, but as directed to claims “4–7 and 11–13” on page 30 of the Petition. Because Petitioner presents a substantive analysis of claim 14 under this Ground, however, we consider the identification of claims 4–7 and 11–13 on page 30 to be a typographical error. *See* Pet. 42–43.

each and every limitation of these claims. *Id.* at 35–43. And, relying on the declaration testimony of Mr. Drewry, Petitioner contends that an ordinarily skilled artisan would have been motivated to combine the teachings of the references with a reasonable expectation of success. *Id.* at 34–35. We institute an *inter partes* review on the ground of obviousness over Weiman and Mozeleski for all challenged claims (i.e., claims 4–7 and 11–14).

On this record, we are satisfied that Petitioner establishes sufficiently for institution that the combination of Weiman and Mozeleski discloses each and every limitation of the challenged claims. Pet. 35–43. For dependent claims 4, 5, 11, and 12, for example, Petitioner relies primarily on Mozeleski’s teachings. *Id.* at 35–36, 41. Petitioner contends, and we agree, that Mozeleski satisfies the language in claims 4 and 11—directed to “curved” anchors “designed to pierce a bone of the patient to fasten the implant to the patient”—because Mozeleski teaches “curved bone blades 410” that “allow[] the bone blade 410 to engage the vertebra,” and “limit migration of the modular cage system 100 once the bone blade 410 is locked in place.” Pet. 35–36, 41 (citing Ex. 1006 ¶¶ 74–75; Ex. 1002 ¶¶ 140–148, 254–258, 283–284). Petitioner also contends, and we agree, that Mozeleski satisfies the language in claims 5 and 12—directed to the anchors having a “t-shaped cross-section and sharp edges to pierce the bone of the patient to fasten the spacer<sup>7</sup> to the patient”—because Mozeleski also teaches that the “bone engaging portion 414 of the bone blade 410 can include a cross

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<sup>7</sup> We observe that “the spacer” in claims 5 and 11 lacks antecedent basis. It is unclear whether “the spacer” is a typographical error. The parties should address this issue at trial.

sectional shape configured to translate through bone.” *Id.* at 36–38, 41 (citing Ex. 1006 ¶ 75; Ex. 1002 ¶¶ 140–148, 259–272, 285–286).

For dependent claims 6, 7, 13, and 14, Petitioner relies primarily on Weiman’s teachings. *Id.* at 39–43 (citing Ex. 1004 ¶¶ 94, 103, 109, 127, 141, 156, 170, 195, Figs. 15–16, 79; Ex. 1002 ¶¶ 65–70, 140–148, 273–293; Ex. 1006 ¶¶ 65, 70). We have reviewed Petitioner’s contentions and find that they are supported by the cited evidence. In particular, we note that Weiman discloses that “the endplates 14, 16 can be expanded in any of the following ways: straight rise expansion, straight rise expansion followed by a toggle into a lordotic expanded configuration, or a phase off straight rise into a lordotic expanded configuration.” Ex. 1004 ¶ 103. Thus, on this record, we determine that Petitioner demonstrates sufficiently that Weiman discloses the expansion of the implant such that the endplates are parallel or non-parallel, as recited in claims 6 and 13 and in claims 7 and 14, respectively.

Because Patent Owner did not file a Preliminary Response, Petitioner’s arguments and evidence as to motivation to combine Weiman and Mozeleski and reasonable expectation of success are unrebutted at this stage. In any event, we are satisfied on this record that Petitioner has set forth sufficient argument and evidence supporting its contentions on these points. Pet. 34–35 (citing Ex. 1001, 1:14–15, 5:65–6:1; Ex. 1002 ¶¶ 140–148; Ex. 1004 ¶¶ 6, 191; Ex. 1006 ¶¶ 2, 7, 74, 75). Thus, based on the record before us and the application of the reasonable likelihood standard, we are satisfied that Petitioner has established a reasonable likelihood that it would prevail in showing that one or more of claims 4–7 and 11–14 are unpatentable over the combination of Weiman and Mozeleski.

*G. Ground 3 – Alleged Obviousness Over Weiman, Mozeleski, and Seifert*

Petitioner contends that claims 7 and 14 are also unpatentable as obvious over Weiman, Mozeleski, and Seifert. Pet. 30–43. Specifically, Petitioner contends that “[w]hile a POSITA would have more than sufficient information and motivation to arrive at the configurations of claims 7 and 14 in view of Weiman alone, much less Mozeleski, Seifert would provide still further information and motivation to arrive at the configurations of claims 7 and 14.” Pet. 46 (citing Ex. 1002 ¶¶ 169–176). In light of *SAS* and the Consolidated TPG, we institute an *inter partes* review on the ground of obviousness over Weiman, Mozeleski, and Seifert for all challenged claims (i.e., claims 7 and 14). For completeness, we observe that Seifert teaches that “when in compressed or expanded configuration,” the “relative orientation of endplates 110, 112 may be substantially parallel, or may be non-parallel.” Ex. 1004 ¶ 85. Thus, we agree with Petitioner on this record that the expanded states recited in claims 7 and 14 were known in the art. Pet. 30–43.

*H. Ground 4 – Anticipation by, or Obviousness Over, Seifert*

Petitioner contends that claims 1–3 and 8–10 are unpatentable as anticipated by, or obvious over, Seifert. Pet. 48–68. Having considered the arguments and evidence before us, we find that the record establishes a reasonable likelihood that Petitioner would prevail on this asserted ground of unpatentability.

*1. Independent Claim 1*

Taking claim 1 as illustrative, we are satisfied on this record that Petitioner establishes sufficiently for institution that Seifert discloses each

and every limitation of the claim. *See* Pet. 48–67. As to the preamble, we agree with Petitioner that Seifert discloses a “surgical system” (limitation i), specifically, a “surgery position spacer.” Pet. 48 (quoting Ex. 1010 ¶ 130); *see also* Ex. 1002 ¶ 304. We also agree with Petitioner that Seifert discloses “an implant” (limitation ii) by teaching that the disclosed “[s]pacers 100 may be *implanted* within any level of the spine, and may also be implanted in other joints of the body, including joints of the hand, wrist, elbow, shoulder, hip, knee, ankle, or foot.” Pet. 48 (quoting Ex. 1010 ¶ 126 (emphasis added)); *see also* Ex. 1002 ¶ 305).

Turning to limitation [iii] (“a first endplate, wherein the first endplate comprises a planar portion with protrusions and an extension portion”) and limitation [iv] (“a second endplate”), we agree with Petitioner that Seifert sufficiently discloses these claimed features. *See* Pet. 49–54 (citing Ex. 1004 ¶¶ 80, 82–83, 108, 133–135, 140, Figs. 1, 50; Ex. 1002 ¶¶ 306–320). Specifically, Seifert discloses that “[s]pacer 100 includes two separable endplates 110, 112.” Ex. 1010 ¶ 80. Seifert also discloses that those endplates have a “surface 114.” *Id.* We agree with Petitioner on this record that the “surface 114” constitutes a “planar portion,” as claimed. Pet. 49–50 (citing Ex. 1010 ¶ 80, Fig. 1; Ex. 1002 ¶ 307). Seifert further discloses that the surface 144 of the endplates “can be provided with teeth or other projections 116 which can penetrate body tissue to reduce a likelihood of migration of spacer 100 after implantation.” Ex. 1010 ¶ 80. We again agree with Petitioner on this record that these projections constitute “protrusions,” as claimed. Pet. 49 (citing Ex. 1010 ¶ 80; Ex. 1002 ¶ 306).

As to the claimed “extension portion” recited in limitation [iii], we agree with Petitioner on this record that Seifert’s “fixation portion 124”

satisfies this limitation. *See* Pet. 49–50 (citing Ex. 1010 ¶ 82; Ex. 1002 ¶¶ 306–318). Specifically, Seifert discloses that “endplates 110 and 112 are formed in two connected portions, including a portion 122, 122A . . . and a fixation portion 124, 124A.” Ex. 1010 ¶ 82.

We also agree with Petitioner that Seifert discloses “a first ramped body extending between the first endplate and the second endplate, wherein the first ramped body comprises at least one upwardly facing ramp engaging the first endplate and at least one downwardly facing ramp engaging the second endplate” recited in limitation [v] of claim 1. *See* Pet. 54–58 (citing Ex. 1010 ¶¶ 81, 84, 133, 137, Figs. 5, 27, 50, 52; Ex. 1002 ¶¶ 321–327). Specifically, Seifert discloses that the “spacer portion 422 comprises a frame or body 452 for receiving a carriage or translation member 456 therein.” Ex. 1010 ¶ 133. Seifert discloses that this translation member 456 “includes three pairs of ramps 466, 468, 470 extending upwardly from the body of the translation member 456, as well as three pairs of ramps extending downwardly from the body of the translation member 456.” *Id.* ¶ 137. These ramps, Seifert discloses, “engag[e] with ramps on corresponding endplates.” *Id.*

We reproduce Figure 50 below with annotations added by Petitioner.

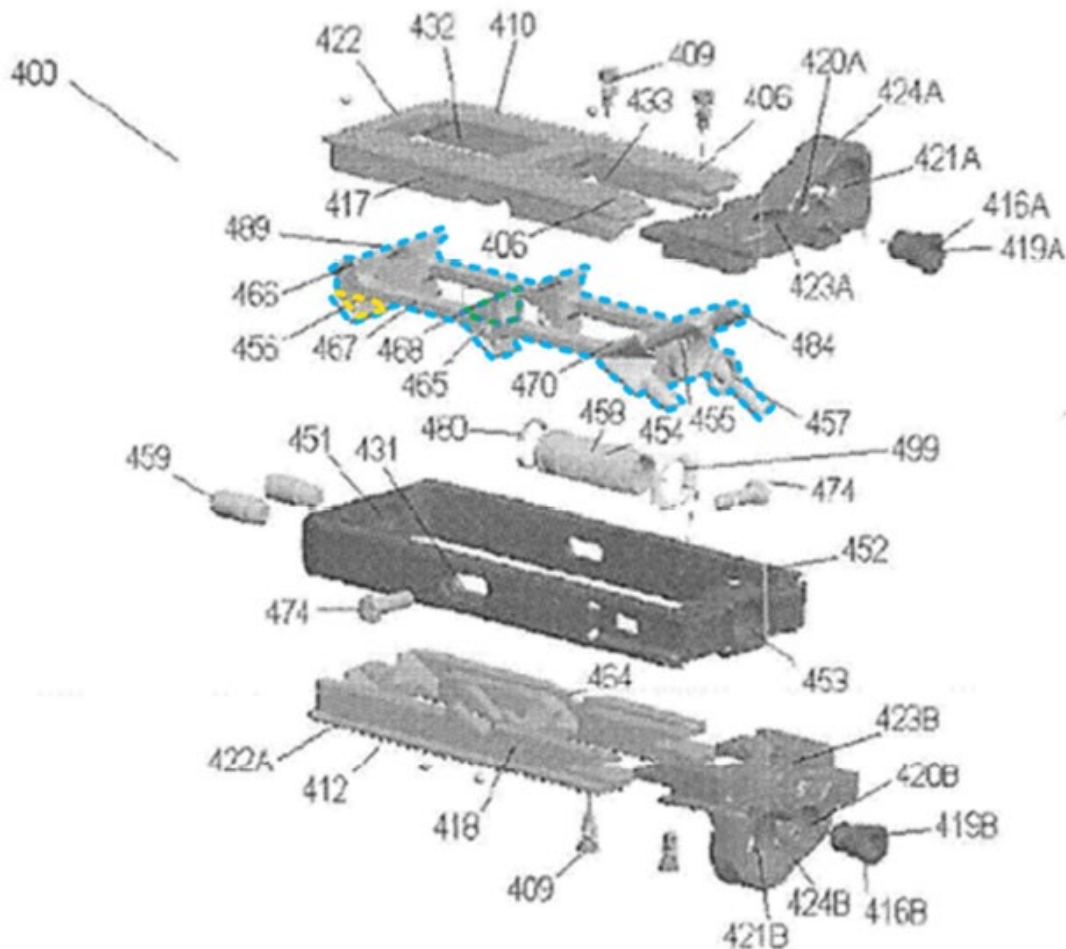


FIG. 50

Pet. 58. In its annotated version of Weiman’s Figure 50, above, Petitioner highlights “carriage or translation member 456” in blue, upwardly extending ramp 468<sup>8</sup> in green, and a downwardly extending ramp in yellow. *Id.* We agree with Petitioner on this record that an ordinarily skilled artisan would have understood that Seifert’s carriage or translation member 456 (highlighted in blue) is a “first ramped body extending between the first

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<sup>8</sup> In its text, Petitioner states that “ramp 466” is in green. Pet. 57. We consider this a typographical error, because the green highlighting surrounds “ramp 468.”

endplate and the second endplate” that includes an “upwardly facing ramp engaging the first endplate” (highlighted in green) and a “downwardly facing ramp engaging the second endplate” (highlighted in yellow), as recited in limitation [v] of claim 1. Pet. 57. Indeed, Seifert discloses that “[a]s the translation member 456 moves or translates laterally, ramps on the translation member 456 engage corresponding ramps on endplates, thereby causing expansion and/or contraction of the device.” Ex. 1010 ¶ 137.

Turning to “actuator” limitations of claim 1, we agree with Petitioner on this record that Seifert discloses “an actuator in engagement with the first ramped body” (limitation [vi]), “wherein rotation of the actuator causes translation of the first ramped body, thereby causing expansion of the implant” (limitation [vii]). Pet. 58–60 (citing Ex. 1010 ¶¶ 81, 87, 133, 137, Figs. 1, 51; Ex. 1002 ¶¶ 328–336). Seifert discloses “an actuator 150” that is “operable to change a relative relationship of endplates 110 and 112.” Ex. 1010 ¶ 81. Specifically, the actuator “includes a frame 152 rotatably supporting an actuator screw 154.” *Id.* And, when rotated, the actuator screw “mov[es] the translation member 456 to expand or contract the distance of separation between the endplates.” *Id.* ¶ 333.

Turning to the “socket” limitation of claim 1, we agree with Petitioner on this record that Seifert discloses “a first socket formed through the extension portion of the first endplate, wherein the first socket extends completely above the planar portion of the first endplate” (limitation [viii]). Pet. 60–63 (citing Ex. 1010 ¶¶ 80, 96, 133, 146, Figs. 1–5, 78; Ex. 1002 ¶¶ 337–342). We again reproduce Figure 50 below with annotations added by Petitioner.

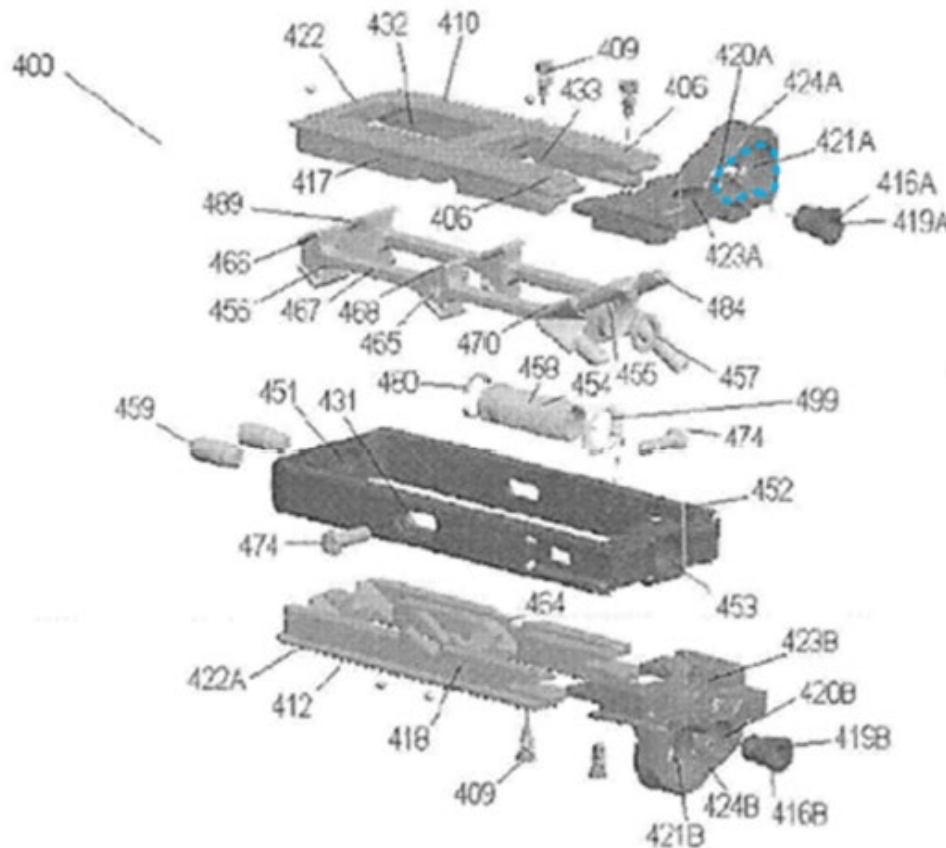


FIG. 50

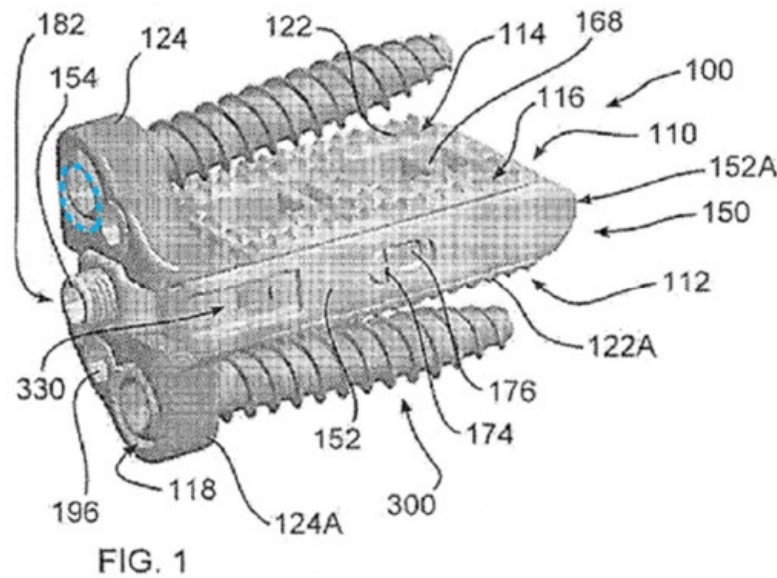
Pet. 62. In its annotated version of Seifert's Figure 50, above, Petitioner identifies the "bone screw opening 421A and blocking screw opening 420A" in blue as the claimed "first socket." *Id.* at 61–62 (citing Ex. 1002 ¶¶ 340–342). In this embodiment, Petitioner contends that this "first socket" is formed through the "plate portion 424A" of the "upper endplate 410," and thus satisfies the claim language "a first socket formed through the extension portion of the first endplate." *Id.* We agree with Petitioner.

As noted above, Seifert discloses an upper endplate and a fixation portion that satisfy the claimed "first endplate" and "extension portion," respectively. Seifert discloses that the "spacer portion 422 is operably attached to at least one plate portion 424 comprising a bone screw opening

421 for receiving a bone screw (not shown) for insertion into a bone member and a blocking screw opening 420 for receiving a blocking screw 419.”

Ex. 1010 ¶ 133. Because Seifert’s bone screw opening 421A and blocking screw opening 420A receive fasteners/screws, we agree with Petitioner on this record that they constitute a “socket” as claimed in the ’087 patent. *See* Pet. 63 (citing Ex. 1010 ¶ 146, Ex. 1002 ¶ 342). Indeed, Seifert elsewhere refers to the larger opening as “screw socket 118.” Ex. 1010 ¶¶ 80 (stating that “[s]pacer 100 is further secured with one or more fasteners, such as bone screws 300, which pass through an adapter, such as bone screw socket 118 within spacer 100, and into body tissue of the patient”), 96 (stating that “[b]one screws 300 can have spherical or otherwise curved heads, facilitating insertion at a desired angle, or may be provided to mate with socket 118 in a fixed orientation, for example depending on a diameter of a neck portion of screw 300”).

We also agree with Petitioner on this record that Seifert sufficiently shows that the socket or screw openings “extend[] completely above the planar portion of the first endplate” as recited in limitation [viii]. Pet. 61 (citing Ex. 1010, Figs. 1–5; Ex. 1002 ¶ 339). In this regard, Petitioner relies on annotated Figure 1, reproduced below.



Pet. 61. Figure 1, reproduced above, is a perspective view of Seifert's expandable vertebral implant with the socket highlighted in blue. Ex. 1010 ¶ 20. Mr. Drewry states, and we agree, that this illustration shows that the fixation portion 124 extends completely above the planar portion of the first endplate 110. Ex. 1002 ¶ 339. And, because the socket is located in the fixation portion 124, we agree with Mr. Drewry that the socket also extends completely above the planar portion of the first endplate 110. *Id.*; see also Pet. 61.

We now turn to the final limitation (limitation [ix]) of claim 1, which recites “a first anchor configured to fasten the implant to the patient, wherein the anchor is received in the first socket.” We agree with Petitioner on this record that Seifert discloses the claimed anchor. Pet. 63–64 (citing Ex. 1010 ¶¶ 80, 83, 146; Ex. 1002 ¶¶ 343–349; Ex. 1012, 54; Ex. 1018 ¶ 113, Ex. 1001, 48:56–59; Ex. 1020 ¶ 8, Fig. 1A). As an initial matter (and as Petitioner points out), Seifert refers to the spacer 100 as being “anchor[ed]” within the body by a fastener. Ex. 1010 ¶ 83. Seifert also discloses that

“[s]pacer 100 is further secured with one or more fasteners, such as bone screws 300, which pass through an adapter, such as bone screw socket 118 within spacer 100, and into body tissue of the patient.” Ex. 1010 ¶ 80. Seifert does not specifically refer to the bone screws or fasteners as “anchors,” but—for the same reasons explained above with respect to Weiman—we agree with Petitioner on this record that an ordinarily skilled artisan would have readily understood that Seifert’s “bone screw 300” is an “anchor” as claimed. Pet. 63 (citing Ex. 1002 ¶¶ 345–349); *see also supra* § II.E.1 (citing Ex. 1012, 54; Ex. 1001, 48:56–59). And—for the same reasons discussed above with respect to Weiman—we agree with Petitioner on this record that an “anchor” would have been an obvious substitution for Seifert’s “bone screw 300.” Pet. 64 (citing Ex. 1002 ¶¶ 234–238, 349); *see also supra* § II.E.1 (citing Ex. 1020 ¶¶ 8, 62, Fig. 1A; Ex. 1002 ¶¶ 234–238). For these reasons, we determine that Petitioner has established sufficiently for institution that the Weiman teaches or suggests limitation [ix] of claim 1.

In summary, based on the record presently before us and the application of the reasonable likelihood standard, we are satisfied that Petitioner has shown sufficiently for institution that Seifert discloses each and every limitation of claim 1.

## *2. Independent claim 8*

Having determined that Petitioner has shown sufficiently for institution that Seifert discloses each and every limitation of claim 1, we also determine that Petitioner has shown sufficiently for institution that Seifert discloses each and every limitation of claim 8. *See* Pet. 67–68 (referring to its analysis of the same limitations in claim 1).

### 3. Summary for Ground 4

In summary, based on the record before us and the application of the reasonable likelihood standard, we are satisfied that Petitioner has shown a reasonable likelihood that it would prevail in showing independent claims 1 and 8 unpatentable for anticipation by, or obviousness over, Seifert. Claims 2 and 3 depend, either directly or indirectly, on claim 1, and claims 9 and 10 depend, either directly or indirectly, on claim 8. In addition, we have reviewed Petitioner’s arguments and supporting evidence as to dependent claims 2, 3, 9, and 10, and find them sufficient for institution based on the current record. *See* Pet. 65–66, 67 (citing Ex. 1002 ¶¶ 337–354, 362–364; Ex. 1010 ¶¶ 80, 135). Thus, we also institute an *inter partes* review of dependent claims 2, 3, 9, and 10 on the same ground. *SAS*, 138 S. Ct. at 1355–56.

#### I. Ground 5 – Alleged Obviousness Over Seifert and Mozeleski

Petitioner contends that claims 4–7 and 11–14<sup>9</sup> are unpatentable as obvious over Seifert and Mozeleski. Pet. 68–72. Specifically, Petitioner contends that the combination of Seifert and Mozeleski teaches or suggests each and every limitation of these claims. *Id.* at 69–72. And, relying on the declaration testimony of Mr. Drewry, Petitioner contends that an ordinarily skilled artisan would have been motivated to combine the teachings of the references with a reasonable expectation of success. *Id.* at 68–69. We

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<sup>9</sup> Petitioner identifies Ground 5 as directed to claims “4–7 and 11–14” on page 4 of the Petition, but as directed to claims “4–7 and 11–13” on page 68 of the Petition. Because Petitioner presents a substantive analysis of claim 14 under this Ground, however, we consider the identification of claims 4–7 and 11–13 on page 68 to be a typographical error. *See* Pet. 72.

institute an *inter partes* review on the ground of obviousness over Seifert and Mozeleski for all challenged claims (i.e., claims 4–7 and 11–14).

On this record, we are satisfied that Petitioner establishes sufficiently for institution that the combination of Seifert and Mozeleski discloses each and every limitation of the challenged claims. Pet. 35–43. For dependent claims 4, 5, 11, and 12, Petitioner relies on the same teachings in Mozeleski as it did in Ground 2. *See id.* at 69–70 (referring to its analysis of the same limitations in Ground 2). We agree with Petitioner’s mapping of the claimed limitations to Mozeleski for the same reasons explained above with respect to Ground 2. *Supra* § II.F.

And for dependent claims 6, 7, 13, and 14, Petitioner relies primarily on Seifert’s teachings. Pet. 70–72 (citing Ex. 1010 ¶¶ 85, 85, 144; Ex. 1002 ¶¶ 140–148, 177–189, 259–272, 278–282, 289–299, 369–374, 377–382). We have reviewed Petitioner’s contentions and find that they are sufficiently supported by the cited evidence. For example, Seifert discloses that “a relative orientation of endplates 110, 112 may be substantially parallel, or may be non-parallel, for example to produce an effective lordosis” and that “planes defined by an interior portion of endplates 110, 112 may be relatively parallel, but bone contacting surfaces may be relatively non-parallel.” Ex. 1010 ¶ 85. Thus, on this record, we determine that Petitioner demonstrates sufficiently that Seifert discloses expansion of the implant such that the endplates are parallel or non-parallel, as recited in claims 6 and 13 and in claims 7 and 14, respectively.

Because Patent Owner did not file a Preliminary Response, Petitioner’s arguments and evidence as to motivation to combine Seifert and Mozeleski and reasonable expectation of success are un rebutted at this stage.

Nevertheless, we are satisfied on this record that Petitioner has set forth sufficient argument and evidence supporting its contentions on these points. Pet. 68–69 (citing Ex. 1001, 1:14–15, 33:63–66; Ex. 1002 ¶¶ 177–189; Ex. 1010 ¶¶ 2, 79, 80; Ex. 1006 ¶¶ 2, 59, 74, 75). Thus, based on the record before us and the application of the reasonable likelihood standard, we are satisfied that Petitioner has established a reasonable likelihood that it would prevail in showing that one or more of claims 4–7 and 11–14 are unpatentable over the combination of Seifert and Mozeleski.

*J. Ground 6 – Alleged Obviousness Over Seifert, Mozeleski, and Weiman*

Petitioner contends that claims 7 and 14 are also unpatentable as obvious over Seifert, Mozeleski, and Weiman. Pet. 72–74. Specifically, Petitioner contends that, while “it would have been obvious to combine Seifert and Mozeleski,” “Weiman’s teachings with regard to its ‘straight rise expansion’ and ‘toggle’ into ‘lordotic expanded configuration’ provide additional teachings that a POSITA would have found obvious to combine with the aforementioned teachings of Seifert and Mozeleski.” *Id.* at 72 (citing Ex. 1002 ¶¶ 162–176, 190–197). In light of *SAS* and the Consolidated TPG, we institute an *inter partes* review on the ground of obviousness over Seifert, Mozeleski, and Weiman for all challenged claims (i.e., claims 7 and 14). For completeness, we observe that Weiman teaches that “the endplates 14, 16 can be expanded in any of the following ways: straight rise expansion, straight rise expansion followed by a toggle into a lordotic expanded configuration, or a phase off straight rise into a lordotic expanded configuration.” Ex. 1004 ¶ 103. Thus, we agree with Petitioner

on this record that the expanded states recited in claims 7 and 14 were known in the art. Pet. 73–74.

### III. CONCLUSION

For the foregoing reasons, we determine that the information presented establishes a reasonable likelihood that Petitioner would prevail in showing that at least one of the challenged claims of the '087 patent is unpatentable.

At this preliminary stage, we have not made a final determination with respect to the patentability of any challenged claim or any underlying factual and legal issues. *See TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1068 (Fed. Cir. 2016) (noting that “there is a significant difference between a petitioner’s burden to establish a ‘reasonable likelihood of success’ at institution, and actually proving invalidity by a preponderance of the evidence at trial”). Any final decision in this proceeding will be based on the full trial record.

The Board will deem forfeited any issue not raised by Patent Owner in a timely response to the Petition, or as permitted in another manner during trial, even if discussed in this Decision.

Nothing in this Decision authorizes Petitioner, in a manner not otherwise permitted by the Board’s rules, to supplement the information pertaining to any ground advanced in the Petition.

### IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review is instituted for claims 1–14 of the '087 patent based on all grounds asserted in the Petition; and

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FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial commencing on the entry date of this Decision.

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Patent 9,956,087 B2

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