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Paper 46
Date: March 15, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

STRYKER CORPORATION and
WRIGHT MEDICAL TECHNOLOGY, INC.,
Petitioner,

v.

OSTEOMED LLC,
Patent Owner.

IPR2021-01453
Patent 10,245,085 B2

Before SHERIDAN K. SNEDDEN, RICHARD H. MARSCHALL, and JAMIE T. WISZ, *Administrative Patent Judges.*

Opinion by the Board filed by *Administrative Patent Judge* MARSCHALL.

Opinion dissenting-in-part filed by *Administrative Patent Judge* SNEDDEN.

JUDGMENT
Final Written Decision
Determining Some Challenged Claims Unpatentable
35 U.S.C. § 318(a)

Stryker Corporation and Wright Medical Technology, Inc. (collectively, "Petitioner") challenges claims 1–9 of U.S. Patent No. 10,245,085 B2 ("the '085 patent," Ex. 1001), which is assigned to Patent Owner OsteoMed LLC. We have jurisdiction under 35 U.S.C. § 6, and we issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 (2019). For the reasons set forth below, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–7 of the '085 patent are unpatentable and that Petitioner has not shown by a preponderance of the evidence that claims 8 and 9 are unpatentable.

BACKGROUND

A. Procedural History

Petitioner filed a Petition requesting *inter partes* review of the challenged claims. Paper 2 ("Pet."). Patent Owner filed a Preliminary Response. Paper 5. Pursuant to 35 U.S.C. § 314, we instituted an *inter partes* review of claims 1–9 of the '085 patent on all presented challenges. Paper 6 ("Inst. Dec.").

After institution, Patent Owner filed a Response (Paper 23, "PO Resp."), Petitioner filed a Reply (Paper 27, "Pet. Reply"), and Patent Owner filed a Sur-reply (Paper 33, "PO Sur-reply"). An oral hearing in this proceeding was held on December 15, 2022, and a transcript of the hearing is included in the record (Paper 42, "Tr.").

B. Related Matters

Petitioner filed related petitions for *inter partes* review in IPR2021-01450, IPR2021-01451, and IPR2021-01452 for related U.S. Patent Nos. 8,529,608; 9,351,776; and 9,763,716, respectively. Pet. 1–2; Paper 3, 1–2. Patent Owner also identifies the following related matters involving the

same patents, but not the '085 patent: IPR2022-00189, IPR2022-00190, and IPR2022-00191. Paper 15, 2. The parties indicate that Patent Owner asserts the '085 patent against Petitioner in *OsteoMed LLC v. Stryker Corporation*, Case No. 1:20-cv-06821 (N.D. Ill.) and in *OsteoMed LLC v. Wright Medical Technology, Inc.*, Case No. 1:20-cv-1621 (D. Del.). Pet. 1–2; Paper 3, 1–2.

C. The '085 patent

The '085 patent discloses a "system for securing bones together across a joint." Ex. 1001, code (57) (Abstract). The system may be used for reconstructing a joint that has been damaged due to bone or soft tissue trauma, in which a surgeon may need to fuse the bones of the joint together in a configuration that approximates the natural geometry of the joint. *Id*. at 1:28–32.

The '085 patent discloses that its system has "the ability to tightly couple the bones of a joint together" by including a transfixation screw inserted across the joint through a bone plate. *Id*. at 2:44–46. More specifically, the '085 patent discloses that the presence of the transfixation screw across the joint "may increase the contact pressure on the bony interface of the joint, increasing the probability of a positive fusion." *Id*. at 2:57–62. According to the '085 patent, by having the transfixation screw passing from the first bone to the second bone, a "tension band" construct is created "that enables the transfixation screw to absorb a portion of the mechanical stress that would otherwise be imposed upon the plate above the joint when a load is applied to the joint," thereby enhancing the integrity and reliability of the plate and increasing the load that the plate may support without increasing plate thickness. *Id*. at 2:67–3:7.

Figure 2, reproduced below, shows "a bone plate being used in conjunction with a transfixation screw to repair the failed metatarso-phalangeal joint" and immediately below it is Figure 3, which shows "a more detailed isometric view of the bone plate." *Id.* at 3:22–27.

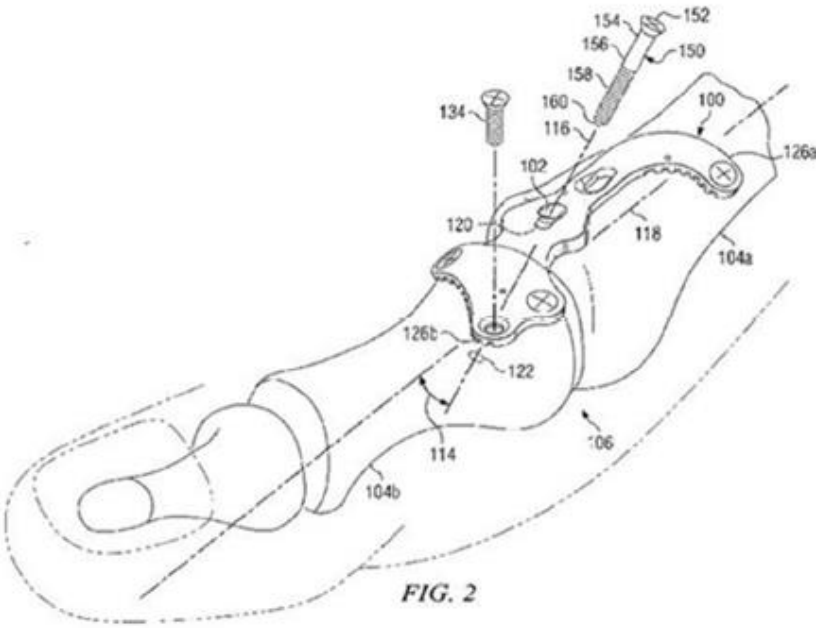


FIG. 2

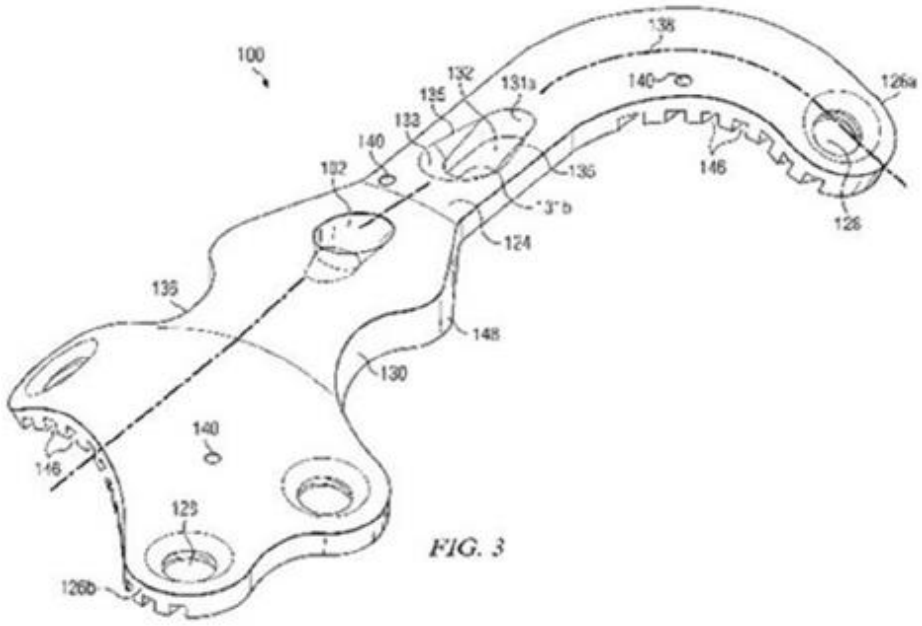


FIG. 3

Figure 2 shows bone plate 100 and transfixation screw 150 applied to a failed metatarso-phalangeal joint. *Id*. at 4:29–31. Transfixation screw 150 is inserted through transfixation screw hole 102 of bone plate 100 and into both first bone 104a and second bone 104b "in order to fuse joint 106." *Id*. at 4:42–47. Figure 3 shows bone plate 100 having elongated spine 124 and bridge portion 130 between first end 126a and second end 126b that can span across joint 106. *Id*. at 7:45–54. First end 126a includes attachment point 128 "for attaching first end 126a to bone 104a" and second end 126b includes another attachment point 128 "for attaching second end 126b to bone 104b." *Id*. The '085 patent discloses that bridge portion 130 "is free of voids such as positioning holes or screw holes that could potentially reduce the bending strength of bridge portion 130" and may include thickened section 136 of bone plate 100 "to increase the bending strength of bridge portion 130." *Id*. at 8:41–39.

D. Challenged Claims

The '085 patent includes nine claims, all of which are challenged, with claim 1 the only independent claim. We reproduce claim 1 below.

> 1. A system for securing a first discrete bone and a second discrete bone together across a joint between the first discrete bone and the second discrete bone, the system comprising:
>
> a plate comprising:
>
> an elongate spine having a first end comprising at least one attachment point for attaching the first end to the first discrete bone on a first side of the joint, a second end comprising at least one attachment point for attaching the second end to the second discrete bone on a second side of the joint, and a bridge portion disposed between the first end and the second end, the bridge portion having a portion configured to span across the joint, the bridge portion further comprising a thickened portion

having a thickness greater than at least a portion of a thickness of either the first end or the second end; and

an aperture defining a transfixation screw hole disposed along the spine at the thickened portion of the bridge portion, the transfixation screw hole comprising an inner surface configured to direct a transfixation screw through the transfixation screw hole such that the transfixation screw extends at a trajectory configured to pass through a first position on the first discrete bone and a second position on the second discrete bone once the plate is placed across the joint.

Ex. 1001, 12:28–53.

E. Asserted Ground of Unpatentability

Petitioner asserts that claims 1–9 are unpatentable based on the following grounds (Pet. 4):

Claim(s) Challenged	35 U.S.C. §	Reference(s)
1–3, 6–9	102(b)[1]	Slater[2]
4, 5	103(a)	Slater, Weaver[3]
1–8	102(b)	Falkner[4]
9	103(a)	Falkner, Arnould[5]
1–3, 6–9	103(a)	Arnould, Slater
4, 5	103(a)	Arnould, Slater, Weaver

[1] The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), amended 35 U.S.C. §§ 102 and 103. Based on the putative effective filing date of the '085 patent, we apply the pre-AIA versions of §§ 102 and 103.

[2] Slater, WO 2007/131287 A1, published Nov. 22, 2007 (Ex. 1005, "Slater").

[3] Weaver et al., US 6,623,486 B1, issued Sept. 23, 2003 (Ex. 1009, "Weaver").

[4] Falkner, US 2005/0171544 A1, published Aug. 4, 2005 (Ex. 1006, "Falkner").

[5] Arnould, EP 1 897 509 B1, published Mar. 12, 2008 (Ex. 1007). Petitioner states that Exhibit 1008 is a certified English translation of Exhibit 1007 (Pet. 4) and we refer to Exhibit 1008 as "Arnould."

Petitioner also relies upon the Declarations of Dr. Kenneth A. Gall (Ex. 1002 and Ex. 1027) and Dr. George B. Holmes, Jr. (Ex. 1028) to support its contentions. Patent Owner relies upon the Declaration of Mr. Mark B. Sommers (Ex. 2002).

ANALYSIS

A. Legal Standards

To prevail in its challenges, Petitioner must prove unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e) (2012); 37 C.F.R. § 42.1(d) (2018). "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")). This burden of persuasion never shifts to Patent Owner.[6] *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burdens of proof in an *inter partes* review).

Petitioner relies on both anticipation and obviousness in its challenges. To anticipate a claim under 35 U.S.C. § 102, "a single prior art reference must expressly or inherently disclose each claim limitation." *Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1334 (Fed. Cir. 2008). That "single reference must describe the claimed invention with sufficient

[6] Although we primarily address Patent Owner's arguments below and identify many of them as unpersuasive, we do not shift the ultimate burden from Petitioner. We focus on such arguments because they identify issues in dispute and we address them as unpersuasive only in the context of the record and Petitioner's assertions.

precision and detail to establish that the subject matter existed in the prior art." *Verve, LLC v. Crane Cams, Inc.*, 311 F.3d 1116, 1120 (Fed. Cir. 2002).

A claim is unpatentable as obvious under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) where in evidence, so-called secondary considerations, also known as objective indicia of non-obviousness.[7] *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

The level of skill in the art is "a prism or lens" through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). "The person of ordinary skill in the art is a hypothetical person who is presumed to know the relevant prior art" at the time of the invention. *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). Factors that may be considered in determining the level of ordinary skill in the art include, but are not limited to, the types of problems encountered in the art, the sophistication of the technology, and educational

[7] The parties do not introduce any evidence pertaining to objective indicia of nonobviousness.

level of active workers in the field. *Id.* In a given case, one or more factors may predominate. *Id.*

Petitioner asserts that one of ordinary skill in the art would have "at least a bachelor's degree in engineering with at least two years of experience in the field, such as experience with the design of surgical implants, or a clinical practitioner with a medical degree and at least two years of experience as an orthopedic surgeon." Pet. 10 (citing Ex. 1002 ¶¶ 35–39). Patent Owner does not dispute Petitioner's proposal. *See* PO Resp. 20.

We adopt Petitioner's asserted level of ordinary skill because it is consistent with the problems identified and solutions provided in the '085 patent and the prior art.

C. Claim Construction

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) (2020). 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.*

Petitioner takes the position that "[t]here are no claim terms in the Challenged Claims that require construction" and that Petitioner has "applied the ordinary and customary meaning of each claim term." Pet. 10–11 (*citing Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*)). Patent Owner generally agrees that the claim terms should be given their ordinary and customary meaning, and also argues that we should find the preamble of claim 1 limiting. PO Resp. 16–17.

Having considered the parties' positions and evidence of record, we determine that we need not expressly construe any claim term to resolve any of the challenges we consider in this Decision. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("[W]e need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy.'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))). To the extent further discussion of the meaning of any claim term is necessary to our decision, we provide that discussion below in our analysis of the asserted grounds of unpatentability.

D. Summary of Cited Prior Art

1. Summary of Slater

Slater relates to an ankle fusion plate for fusion of the anterior ankle. Ex. 1005, 1:6–7. Slater discloses that orthopedic devices can repair diseased bones and bone fractures. *Id.* at 1:21–22. Slater explains that bones that have been fractured must be kept together for lengthy periods of time to permit recalcification and bonding. *Id.* at 3:1–3. According to Slater, internal fixation techniques require "the fracture be stable axially, torsionally and rotationally." *Id.* at 3:19–25; 7:1–2. To achieve such objectives, Slater discloses a fixation screw and plate design in which "the plate depth changes at different locations" so that "the depth at the beginning a[n]d end points of the L shaped contour [of the plate] over the ankle joint in the second region will be at it[s] maximum thickness." *Id.* at 8:27–34. Slater further discloses that "[t]he plate will taper at least one but preferably two different points of the plate" and that "[t]hese points will preferably resemble and conform to the typical geometry of the anatomical region." *Id.* at 9:3–4, 11–12.

Figure 1, reproduced below, shows a side elevation view of a plate attached via fixation screws "to an abbreviated ankle joint (dotted lines)." *Id*. at 9:28–30.

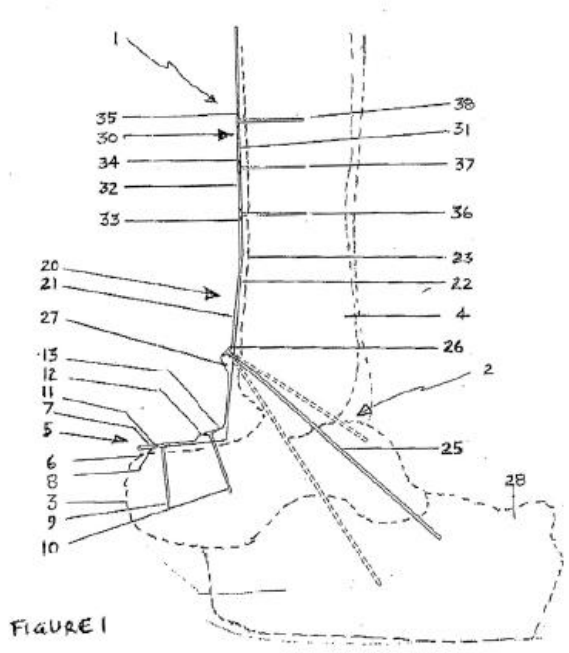


Figure 1 shows fusion plate 1 attached to the talus bone 3 and the tibial bone 4 that form ankle joint 2. Ex. 1005, 11:1–4. Fusion plate 1 includes portion 5 "disposed in a first plane which generally aligns with" anterior surface 6 of the talus bone 3 for fixation thereto. *Id*. at 11:5–8. Disposed in portion 5 are fixation screws 9 and 10 which pass through openings 11 and 12 of portion 5 to engage the talus bone 3. *Id*. at 11:8–9. Portion 20 of fusion plate 1 has formation 27 with opening 26 disposed therein for allowing fixation screw 25 to pass therethrough. *Id*. at 11:18–21. "Formation 27 is configured so that screw 25 is implanted at an angle within a predetermined allowable angular range" such that fixation screw 25 engages the tibia bone 4, the talus bone 3, and the calcaneus bone 28. *Id*. at 11:21–24. Portion 30 of fusion plate 1 includes openings 33, 34, and 35

which receive fastening screws 36, 37, and 38 to engage tibia bone 4. *Id*. at 11:27–31.

2. Summary of Falkner

Falkner relates to systems for fixing bones using bone plates having apertures for retaining fasteners. Ex. 1006, Abstract. Falkner discloses that fixation of bone fractures can be problematic when these fractures are disposed near the ends of bones. *Id*. ¶ 4. Falkner purports to resolve past problems of achieving an interference fit that is tight enough to prevent slippage of a blade portion of the bone plate relative to an interlocking bone screw. *Id.* ¶ 6.

Figure 1, reproduced below, shows a sectional view of a system for fixing bones using a bone plate with a toothed aperture such that the bone plate is secured to a fractured bone. *Id.* ¶ 8.

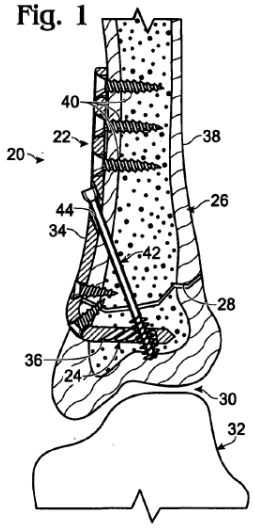


Figure 1 shows system 10 including bone plate 22 with toothed aperture 24 in which bone plate 22 "may be positioned on and/or in any suitable bone(s) to span . . . within a bone or between bones" such as on a region of the tibia bone 26 that spans fracture 28, as depicted. Ex. 1006 ¶ 21. Thus, bone plate 22 may span joint 30 between tibia bone 26 and talus

bone 32. *Id.* Bone plate 22 includes first plate portion 34 and second plate portion 36. *Id.* ¶ 22. Falkner discloses that bone screws 40 "may be placed into bone from any suitable number of openings of the bone plate." *Id.* ¶ 23. Threaded fastener 42 may extend through opening 44 and toothed aperture 42 of bone plate 22. *Id.* ¶ 24. Falkner discloses that bone plate 22 "may be sized and shaped to conform to particular portions of a bone (or bones)" and "may be thicker and thus stronger in regions where they may not need to be contoured, such as along the shaft of the bone." *Id.* ¶¶ 33, 35. Thickness of bone plate 22 "may be varied" within and a thicker portion may be provided to "increase structural stability." *Id.* ¶ 35.

3. Summary of Arnould

Arnould "relates to an arthrodesis plate for a metatarsal-phalangeal joint." Ex. 1008 ¶ 1. Arnould discloses that a leg of its plate "allows the plate to be attached to a lateral surface of the epiphysis of the phalanx." *Id.* ¶ 6. Arnould explains that "this leg is shaped so that its end hole can receive a long screw . . . which will extend both through the bone material of the phalanx and into the bone material of the metatarsal." *Id.* Thus, the "long screw extends lengthwise in a direction having an anteroposterior component, so that this screw essentially, if not exclusively, takes up the bending stresses generated during the patient's walking." *Id.*

Figure 1, reproduced below, shows a perspective view of an arthrodesis plate "placed and fixed on a metatarsal-phalangeal joint locked by the plate." *Id.* ¶ 10.

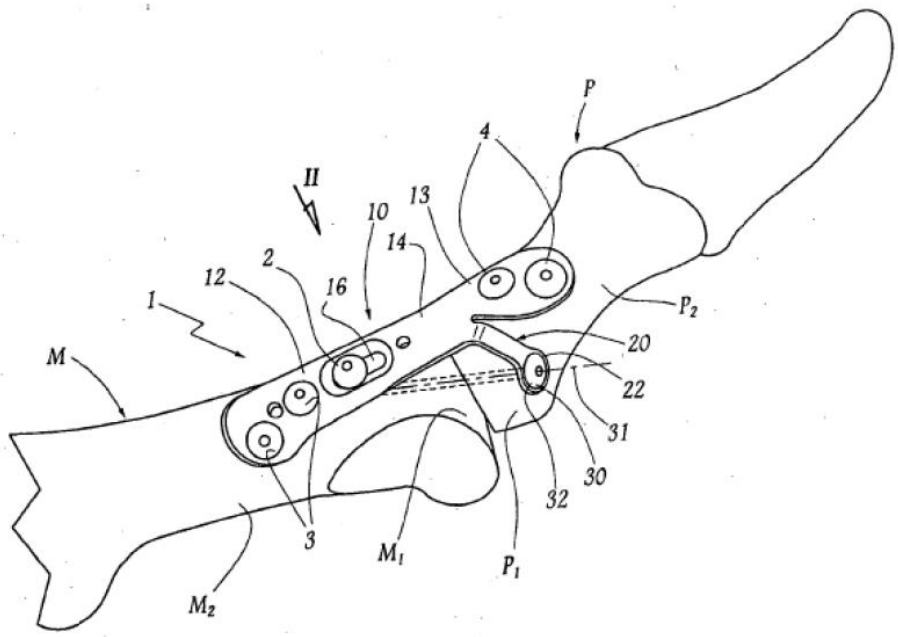


Fig. 1

Figure 1 shows arthrodesis plate 1 on a joint between metatarsal M and first phalanx P of a toe. *Id.* ¶ 11. Plate 1 includes plate body 10 and leg 20. *Id.* ¶ 13. Screws 3 and 4 secure opposite ends of plate body 10 to the bones as shown. *Id.* ¶¶ 33–34.

Leg 20 includes a through-hole for receiving screw 30 that has sufficient length to extend from the through-hole "into both the phalangeal epiphysis P_1 and the metatarsal epiphysis M_1, and possibly also into the metatarsal diaphysis M_2." Ex. 1008 ¶ 26. Arnould states that "the leg 20 is bent downward relative to the plate body 10 along a bend line 23 substantially perpendicular to the longitudinal direction 21 and located at the junction between the leg and the phalangeal portion 13." *Id.* ¶ 24. Between the metatarsal portion 12 and phalangeal portion 13, there is a "zone 14" described as a "joint zone" or "junction zone." *Id.* ¶¶ 14–15. Arnould discloses that it is advantageous to include a junction zone with a "bending

line 141" to allow "better adaptation of the plate body 10 to the anatomy of the . . . joint when it is locked." *Id.* ¶ 20.

4. Summary of Weaver

Weaver is directed to a bone plating system for fracture fixation, which includes a bone plate having plate holes for both locking and non-locking screws. Ex. 1009, 1:10–13. Weaver discloses that "[s]ecuring the screws to the plate provides a fixed angle relationship between the plate and screw and reduces the incidence of loosening" and such screws are called "locking screws." *Id*. at 1:46–49. According to Weaver, a known locking screw has threading on an outer surface of its head that mates with corresponding threading on the surface of a plate hole to lock the screw to the plate. *Id*. at 1:49–54. Weaver discloses that "locking screws provide a high resistance to shear or torsional forces." *Id*. at 1:56–58. However, existing bone plating systems under high stress and loading conditions may have a locking plate hole that is distorted and allows the fixed angular relationship between the locking screw and plate to change. *Id*. at 2:20–22. Weaver purports to resolve such deficiencies in its bone plating system. *Id*. at 2:28–29.

Figure 3, reproduced below, shows a side view of an exemplary bone plate. *Id*. at 3:25.

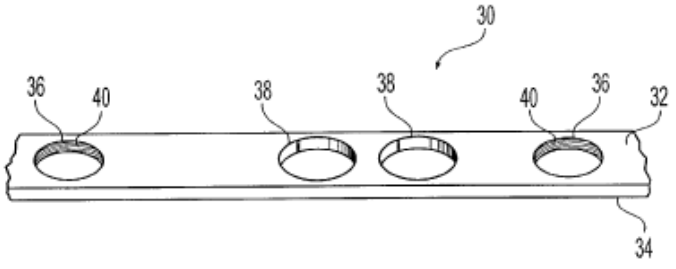


Fig. 3

Figure 3 shows bone plate 30 including first plate holes 36 and second plate holes 38. Ex. 1009, 4:45–46. Each first plate hole 36 has thread 40 that mates with thread 24 on head 22 of locking screw 20 (shown in Figure 2) to secure locking screw 20 to bone plate 30 at a temporally fixed angular orientation whereas second plate holes 38 are not threaded and receive non-locking screws 10 with non-threaded heads 12 (shown in Figure 1). *Id.* at 4:47–53. Weaver discloses that "[f]irst plate holes 36 are preferably conical in shape" and that "threads 40 on first plate holes 36 are also preferably double lead threads" which enable engagement "while maintaining a low profile." *Id.* at 5:1–5.

E. Anticipation of Claims 1–3 and 6–9 by Slater

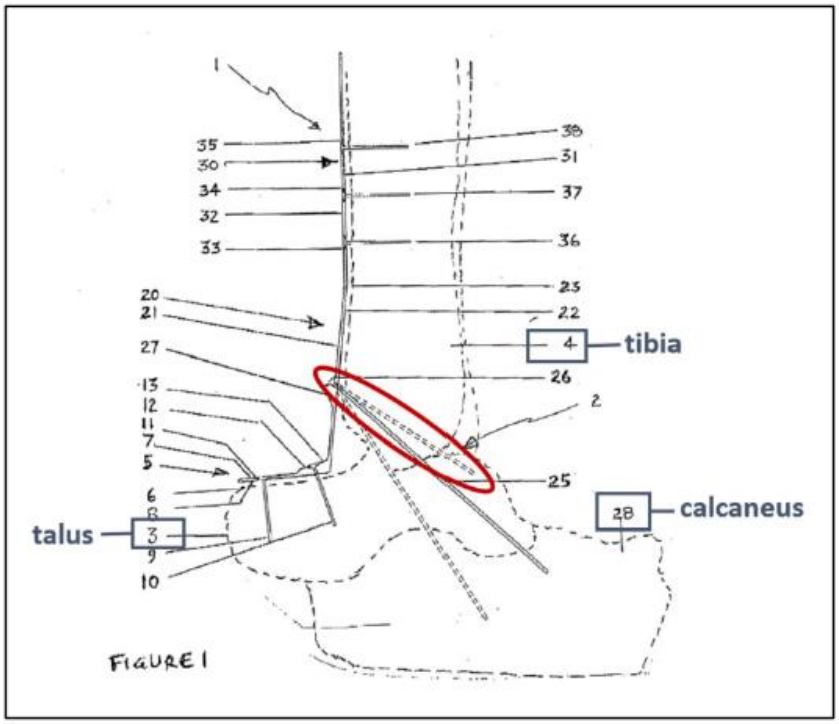
Petitioner contends that Slater discloses all elements of claims 1–3 and 6–9, and thus anticipates those claims under 35 U.S.C. § 102(b). Pet. 17. To support its contentions, Petitioner directs our attention to the discourses of Slater and provides a detailed claim analysis addressing how Slater discloses each element of claims 1–3 and 6–9. Pet. 17–34 (citing Ex. 1002). Patent Owner argues that (1) Petitioner improperly relies on multiple, discrete embodiments in Slater; (2) Slater fails to disclose the preamble of claim 1; (3) Slater fails to disclose "the bridge portion further comprising a thickened portion"; and (4) Slater fails to disclose "a transfixation screw hole disposed along the spine at the thickened portion of the bridge portion." PO Resp. 21–32.

Having considered the parties' positions and evidence of record, we determine that Petitioner has demonstrated by a preponderance of evidence that claims 1–3, 6, and 7 are anticipated by Slater and has not demonstrated that claims 8 and 9 are anticipated by Slater. Our analysis follows.

1. Claim 1

a. The Preamble and the Multiple Embodiments Dispute

The preamble of claim 1 requires a "system for securing a first discrete bone and a second discrete bone together across a joint between the first discrete bone and the second discrete bone." Petitioner contends that, if the preamble limits claim 1, Slater discloses a system for securing two discrete bones together across a joint between the two bones. Pet. 17–18.[8] In support, Petitioner directs our attention to its annotated Figure 1 of Slater, reproduced below, which shows "a side elevation view of a plate according to one embodiment and attached via fixation screws to an abbreviated ankle joint (dotted lines)." Pet. 18; Ex. 1005, 9:28–30.



[8] We need not decide whether the preamble limits the claim because Slater discloses a system for securing two bones as the preamble requires. Moreover, although other portions of claim 1 might limit it to a system for securing two (and only two) bones, the preamble (if limiting) does not appear to exclude a system that secures more than two bones.

Id. Petitioner's annotated version of Figure 1, above, adds boxes and text to identify the tibia, talus, and calcaneus, and also includes a red oval around one of three screw paths shown in the figure. *Id.* With reference to the figure above, Petitioner asserts that

> Figure 1 of Slater illustrates (1) a fusion plate 1 being used to secure three discrete bones (tibia 4, talus 3, and [calcaneus] 28) across two joints and (2) an alternate embodiment where fusion plate 1 is used to secure two discrete bones (tibia 4 and talus 2, within the oval annotated into Figure 1 [above]) together across a single joint between the two bones.

Pet. 18 (citing Ex. 1002 ¶ 133; Ex. 1005, 12:3–4, 6:17–7:2, 8:13–28, 11:1–4, 12:3–10, 13:5–9, 14:1–8). Petitioner supports this interpretation of Slater with Dr. Gall's testimony. *See* Ex. 1002 ¶ 133.

Patent Owner contends that Petitioner relies "on different embodiments described throughout the disclosure, including the distinct two- and three-bone embodiments detailed in Figure 1, as well as various other plates disclosed in Slater, such as the Figure 5 plate." PO Resp. 22 (citing Ex. 2002 ¶ 58). As to Figure 1, Patent Owner contends that the specification focuses on the three-bone embodiment and Petitioner improperly relies "on expert testimony to fill the gaps regarding how the three-bone embodiment would be modified for a two-bone application." *Id.* at 23 (citing Pet. 2, 18–34; Ex. 1005, 14:1–3; Ex. 2002 ¶¶ 75–84). Patent Owner also argues that Petitioner relies on multiple embodiments, including aspects of Figure 5, to meet the "bridge portion further comprising a thickened portion" limitation, which lacks support in Slater given that there are several differences between Figures 1 and 5, such that viewing them as describing the same embodiment, as Petitioner and Dr. Sommers do, lacks support. *Id.* at 24 (citing Ex. 1005, Figs. 1, 5, 6 (annotated); Ex. 2002 ¶ 58;

Ex. 2003, 72:20–73:7). Turning to the preamble, Patent Owner argues that Petitioner relies "on Slater's disclosure of a dotted line two-bone screw in Figure 1 in combination with Slater's disclosure of a plate used with a screw across three bones." *Id.* at 26. Patent Owner also contends that "the conclusory nature" of Dr. Gall's declaration highlights the lack of disclosure in Slater as to the two-bone embodiment. *Id.* at 27 (citing Ex. 1002 ¶ 133; Ex. 1005, 12:3–4, 8:27–28, 14:1–2). According to Patent Owner, Slater primarily focuses on its three-bone embodiment and fails to describe the two-bone embodiment or the use of screw 25 with the two-bone embodiment. *Id.* at 27–28 (citing Ex. 1005, 16:28–30; Ex. 2002 ¶¶ 75–84).

In its Reply, Petitioner argues that "Slater is replete with references indicating that ***the same plate*** may be used to fuse two bones or three bones. Pet. Reply 3 (citing Ex. 1005, 6:18–28, 8:27–28, 12:3–5, 14:1–3, 16:28–32,17:3–5). Petitioner also argues that Patent Owner adopts Petitioner's approach, that Slater's Figure 1 discloses a screw and plate that work with a two-bone embodiment and reliance on Figures 1 and 5, in related *inter partes* reviews. *See id.* (citing Ex. 1025 ¶ 81; Ex. 1026 ¶ 76), *id.* at n.1 (citing IPR2022-00487, Pet., 21–25; IPR2022-00488, Pet., 18–19). Petitioner contends that Figures 1 and 5 disclose the same embodiment for purposes of anticipation because Slater describes Figure 1 as a "generally schematic view of a fusion plate 1" attached to an ankle joint and Figure 5 "shows a side cross sectional elevation view of a plate according to a preferred embodiment isolated from an ankle joint." *Id.* at 3–4 (citing Ex. 1005, 10:6–7, 11:1–4). Petitioner also contends that "[t]he detailed description of Figure 5 refers back to plate 1 of Figure 1 and the screw orientations disclosed therein, thus clarifying that the figures disclose

different aspects of the same preferred embodiment." *Id.* at 4–5 (citing Ex. 1005, 9:21–10:27, 10:32, 13:5–6, 14:1–2; Ex. 2003, 72:20–73:7). According to Petitioner, any differences between Figures 1 and 5 "are largely due to the fact that Figure 1 is a schematic drawing intended to illustrate the positioning of the bone plate and screws relative to the joint, whereas Figure 5 is a cross-sectional drawing intended to illustrate additional details regarding the width and thickness of the bone plate and the geometry of the openings." *Id.* at 5 (citing Ex. 1005, 11:1–12:10, 13:5–14:10) (emphasis removed). Petitioner also reiterates its argument that Slater discloses a two-bone embodiment as the preamble requires, as well as a screw for use in that approach. *Id.* at 7–9.

In its Sur-reply, Patent Owner argues that "the Figure 5 plate 80 embodiment is unique in numerous ways that make clear that it is not the same as the Figure 1 plate 1 embodiment" and that the "structural differences between the two plates are not explained by the 'schematic' nature of Figure 1." PO Sur-reply 7–9 (citing Ex. 2002 ¶ 58; Ex. 1005, Figs. 1, 5–7). Patent Owner also argues that Slater fails to support Petitioner's argument that Slater treats all of the disclosure as a single embodiment. *Id.* at 9–10.

We first address whether Petitioner improperly relies on multiple embodiments within Figure 1 itself when it relies on the dotted lines showing a screw located within two, but not three, bones. *See* Pet. 18. Petitioner may not, to support its anticipation challenge, pick and choose from "various disclosures *not directly related to each other* by the teachings of the cited reference." *In re Arkley*, 455 F.2d 586, 587 (1972) (emphasis added). But here, the disclosures of Slater relied upon by Petitioner are

sufficiently related to each other as evidenced by at least Figure 1 itself, and the related written description in Slater. The two-bone embodiment appears to be an "alternate" embodiment only insofar as it reflects another angled pathway for the screw so it anchors in a second and not a third bone. This is not wholly distinct, however, from the three-bone embodiment because both the two-bone and three-bone embodiments are depicted as alternatives within the plate of Figure 1 itself. Figure 1 shows a plate on an ankle, with three potential alternative screw locations—two contacting three bones and a third screw orientation contacting two bones. *See* Ex. 1001, Fig. 1; Pet. 18. Although the three disclosed screw orientations can be thought of as three different approaches and therefore three different embodiments in some sense, we do not see any issue with Petitioner's reliance on one of those screw orientations with the disclosed plate as problematic. *See* Pet. 18. Petitioner does not pick and chose from multiple potential "embodiments" within Figure 1 and instead relies only on the screw shown in contact with two bones. *See id.* For example, Petitioner does not rely on two different screw orientations as part of its anticipation argument. *See id.*

We also do not view Petitioner's reliance on Slater's text as improperly relying on multiple embodiments. Patent Owner seems to take the position that the specification only refers to the three-bone embodiment because it does not explicitly refer to the two-bone embodiment, but Figure 1 makes clear that the disclosed plate and screw can be used with any of the disclosed screw orientations, such that any discussion of that plate should be read as part of the two-bone embodiment Petitioner relies on as well as the three-bone embodiment. *See* Ex. 1001, Fig. 1; PO Resp. 23. Accordingly, Patent Owner's argument that Petitioner fails to explain how to

modify these disclosures to arrive at the two-bone embodiment misses the mark. *See* PO Resp. 23.

With that background, we turn to Petitioner's contention that Slater discloses the preamble. *See* Pet. 17–18. Petitioner argues that Slater discloses a "system for securing a first discrete bone and a second discrete bone together across a joint between the first discrete bone and the second discrete bone" as required by the preamble. *See id.* We agree. As noted above, Slater's Figure 1 shows a plate across an ankle joint that secures a first bone and second bone. *See id.*; Ex. 1002 ¶ 133; Ex. 1005, Fig. 1, 8:27–28, 9:28–30, 12:3–4, 14:1–2.

Patent Owner's arguments as to the preamble largely hinge on its argument that Petitioner improperly relies on multiple embodiments or that Slater fails to describe a two-bone embodiment, two arguments we find unpersuasive for the reasons provided above. *See* PO Resp. 26–28. Patent Owner argues that Slater primarily focuses on its three-bone embodiment, but even disfavored embodiments may still anticipate a claim. *Celeritas Techs. Ltd. v. Rockwell Int'l Corp.*, 150 F.3d 1354, 1361 (Fed. Cir. 1998) ("A reference is no less anticipatory if, after disclosing the invention, the reference then disparages it."). Patent Owner also describes Dr. Gall's testimony as too "conclusory," but we disagree. *See id.* at 27–28. Dr. Gall opines that "Slater also contemplates that the fusion plate 1 can be used to secure two discrete bones (tibia 4 and talus 2, . . .) together across a single joint between the first discrete bone and the second discrete bone" and Slater's Figure 1 supports this testimony by showing a screw path that secures two bones together. Ex. 1002 ¶ 133; Ex. 1005, Fig. 1. Dr. Gall also supports his opinions with citations to Slater that generally support his

opinion that Slater contemplates the use of its plate across a single joint, which involves two bones rather than three bones. *See id.* We view Dr. Gall's testimony as sufficient to support Petitioner's argument, and more credible than the competing testimony Patent Owner relies on. *See* PO Resp. 27–28 (citing Ex. 2002 ¶¶ 75–84).

Patent Owner also argues that Petitioner improperly relies on multiple embodiments when it refers to Figures 1, 5, and 7 when arguing that Slater discloses a bridge portion that includes a thickened portion. *See* PO Resp. 23 (citing Pet. 21–22). This aspect of Patent Owner's arguments does not impact the preamble, which does not refer to the bridge portion or a thickened portion. In addition, as we note below when addressing those limitations, we find that Slater discloses the "bridge portion further comprising a thickened portion" limitation even if we only consider Slater's Figure 1 and the accompanying text. We, therefore, need not reach whether Petitioner's reliance on figures other than Figure 1 amounts to improper reliance on multiple embodiments as part of its anticipation challenge to claim 1.

Based on the foregoing, we find that Petitioner establishes by a preponderance of the evidence that Slater discloses the elements of the preamble to claim 1.

b. Bridge Portion Comprising a Thickened Portion

Claim 1 further requires "the bridge portion further comprising a thickened portion having a thickness greater than at least a portion of a thickness of either the first end or the second end." Petitioner argues that Slater's Figures 5 and 7 show its bridge portion includes a "thickened portion (portions of 5 and 20 or portions of 81 and 90) having a thickness

greater than at least a portion of a thickness of either the first end (proximal end of portion 30 or portion 95) or the second end (distal end of portion 5 or portion 81)." Pet. 22–23 (citing Ex. 1002 ¶ 140, Figs. 5, 7). Petitioner also argues that Slater's text "discloses that the portion of the plate adjacent the ankle joint will preferably be the thickest part of the plate, while the portions towards the ends of the plate may be thinner." *Id.* at 23 (citing Ex. 1005, 8:25–26, 8:32–9:6); *see also id.* ("Slater recognizes that the plate should be at its 'maximum thickness' at the 'region that the highest loading will occur in normal use.'" (citing Ex. 1005, 14:19–23)). Petitioner also relies on dependent claim 29, which recites a kit "wherein the plate thickness varies at different locations and wherein the portion of the plate which lays over the ankle joint has maximum thickness." *Id.* (quoting Ex. 1005, 34:17–19).

Patent Owner argues that Slater's Figure 1 does not depict the claimed bridge with a "thickened portion" and "Slater describes that this portion of the plate is purposefully designed to be thinner to increase 'pliability at regions when bending may be required for conformity with bone anatomy.'" PO Resp. 29 (citing Ex. 1005, 17:2–3; Ex. 2002 ¶ 87). Patent Owner also contends that Petitioner improperly relies on a combination of Figure 1 with Figure 5 to meet the limitation, the argument we noted above in the context of Patent Owner's argument that Petitioner improperly relies on multiple embodiments in its anticipation analysis. *See id.* at 28–30.

In its Reply, Petitioner argues that "Patent Owner wholly fails to address Slater's specification, which unambiguously teaches and claims that the portion of the plate over the ankle joint will preferably be the thickest part of the plate." Pet. Reply 10 (citing Ex. 1005, 24:17–19, 8:25–9:6; Ex. 1027, ¶¶ 18, 20–23). Petitioner also contends that "Patent Owner

incorrectly argues that Slater's bridge portion 'is purposely designed to be thinner to increase 'pliability'" because Slater's pliable regions are at its ends where the plate tapers and conforms to the bones—not the bridge portion." *Id.* at 10–11 (citing PO Resp. 29; Ex. 1005, 9:3–12, 14:18–33; Ex. 1027 ¶¶ 20–23). Petitioner also points to the specific dimensions Slater describes to support its argument—"Slater describes the 'maximum thickness' of the plate at the bridge portion over the ankle joint as being 'within the range of 4-8mm,' while the thickness of the plate at the proximal and distal ends is 'around 1mm.'" *Id.* at 11 (citing Ex. 1005, 8:35–9:11, 14:18–30).

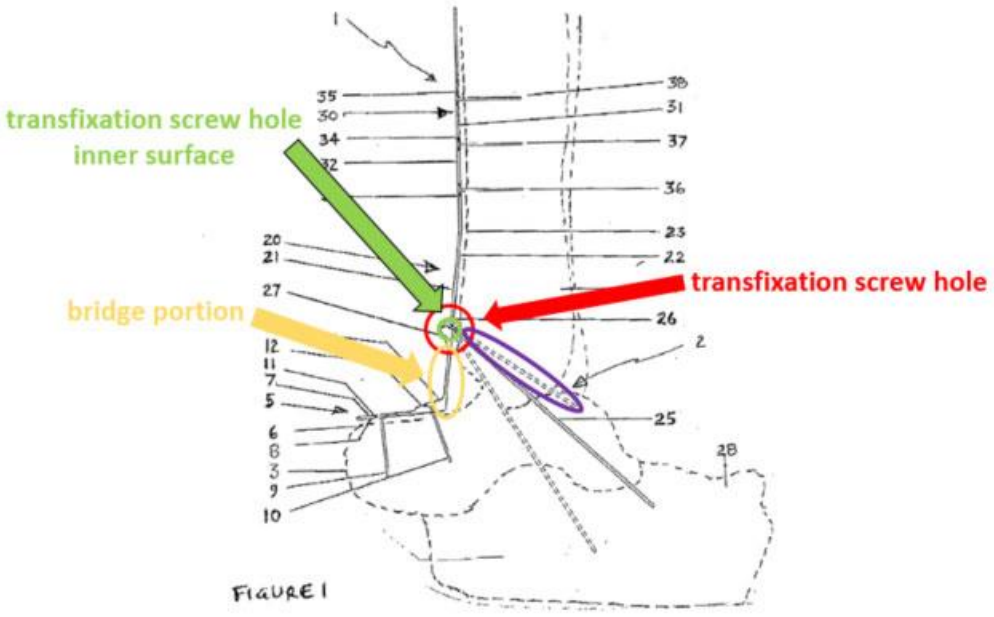
Based on our review of the arguments and evidence, Petitioner establishes that Slater discloses a "bridge portion further comprising a thickened portion" as claim 1 requires. Pet. 22–23; Pet. Reply 10–11. We agree with Petitioner that Slater's Figure 5 discloses a thickened bridge portion, but we need not rely on Figure 5—and address Patent Owner's related argument that by doing so Petitioner improperly relies on multiple embodiments—because Slater's text amply supports its position. As Petitioner points out in the Petition and its Reply, Slater repeatedly describes its bridge portion as thicker than both of its ends, claims this aspect of its plate in dependent claim 29, and even provides specific dimensions consistent with its description of a thickened bridge portion thicker than the ends of the plate. Ex. 1027 ¶¶ 20–23; Ex. 1005, 8:25–26, 8:32–9:11, 9:3–12, 14:18–33, 34:17–19. Petitioner also supports these positions with credible expert testimony from Dr. Gall citing to Slater. *See* Ex. 1002 ¶ 140; Ex. 1027 ¶¶ 20–23. Patent Owner fails to acknowledge or address with

credible counterargument any of these portions of Slater that support Petitioner's position. *See* PO Resp. 28–30.

Based on the foregoing, we find that Petitioner establishes by a preponderance of the evidence that Slater discloses "the bridge portion further comprising a thickened portion having a thickness greater than at least a portion of a thickness of either the first end or the second end."

c. Hole Disposed Along the Spine at the Thickened Portion

Claim 1 further requires "a transfixation screw hole disposed along the spine at the thickened portion of the bridge portion." Petitioner argues that "Slater includes an aperture defining a transfixation screw hole (opening 26 or 93) disposed along the spine at the thickened portion of the bridge portion." Pet. 24–25 (citing Ex. 1002 ¶¶ 140–142; Ex. 1005, 11:19–25, 13:21–25, Figs. 1, 5, 7). Petitioner provides annotated versions of Slater's Figures 1 and 7, reproduced below, to illustrate its position.



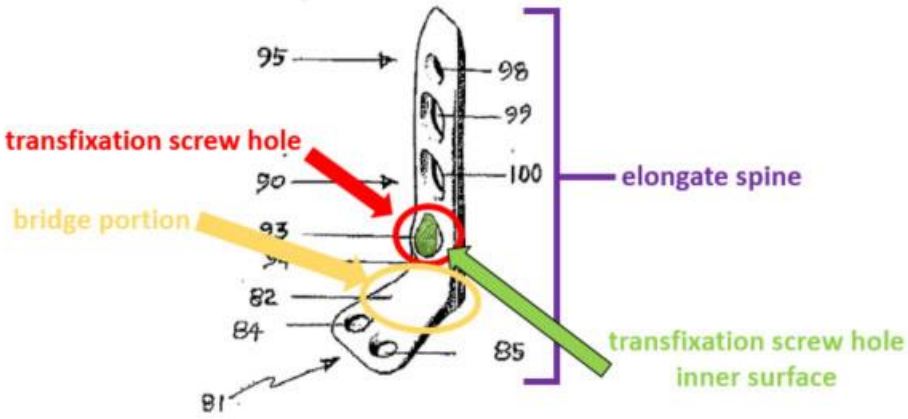


FIGURE 7

The top figure shows an annotated version of Figure 1 while the bottom figure shows an annotated version of Figure 7. *See* Pet. 25. Both figures identify a "bridge portion" in yellow lettering, with a yellow arrow pointing to an oval encompassing a portion of Slater's plate. *Id.* Both figures also identify a "transfixation screw hole" in red with a red arrow pointing to an oval encompassing a hole (26 in Figure 1 and 93 in Figure 7). *Id.* The hole appears adjacent to and directly above the bridge portion in Petitioner's annotated figures. *Id.*

Patent Owner first argues that "neither the Petition nor Dr. Gall's supporting declaration provide any analysis of this claim element other than to simply say it is disclosed in Slater." PO Resp. 30 (citing Pet. 22–23; Ex. 1002 ¶ 140).[9] Patent Owner also contends that the Petition

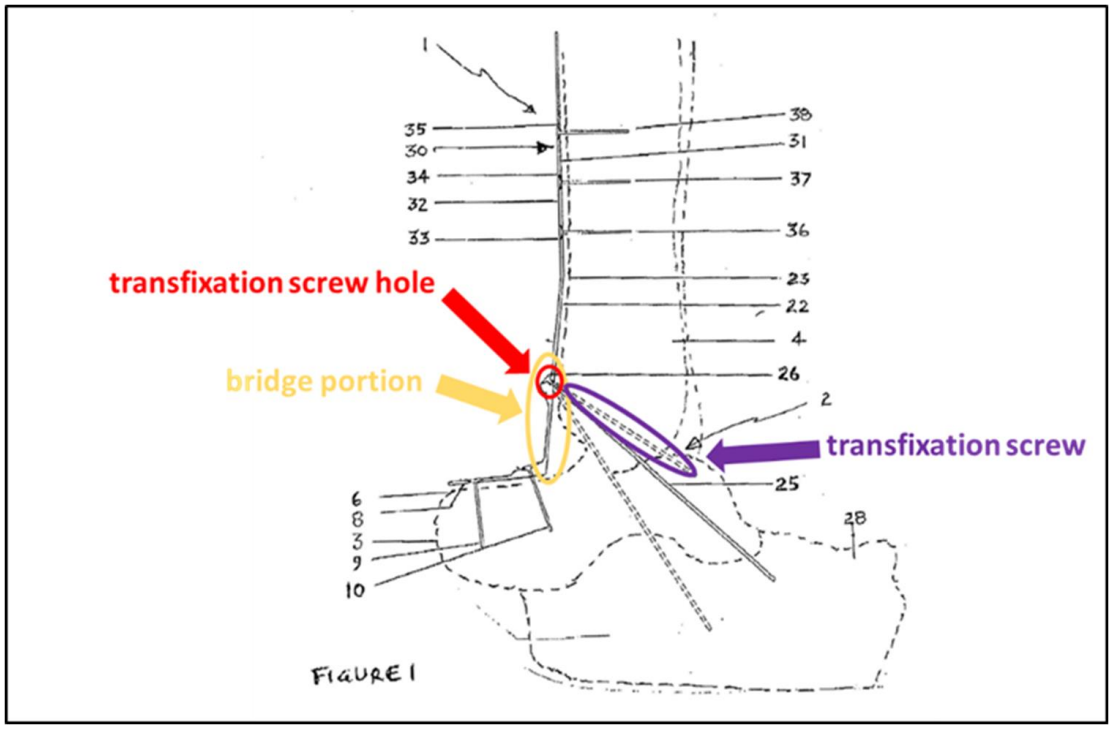
[9] Patent Owner's argument improperly cites to the Petition at pages 22–23 and paragraph 140 of Dr. Gall's declaration as allegedly lacking the requisite analysis, but Petitioner and Dr. Gall do not address this limitation at those passages. *Compare* Pet. 22–23; Ex. 1002 ¶ 140, *with* Pet. ix (annotated version of claim 1), 24–25 (addressing limitation 1.5, which includes the "a transfixation screw hole disposed along the spine at the thickened portion of the bridge portion" limitation) (relying on paragraphs

and Dr. Gall's testimony confirm that Slater does not disclose the limitation because both identify the transfixation screw hole *above* the bridge portion rather than *at* the bridge portion. *Id.* at 30–32 (citing Ex. 1002 ¶ 141; Ex. 2002 ¶¶ 92–94).

In its Reply, Petitioner argues that Patent Owner takes "an overly narrow view of the claim term 'at,'" because "the ordinary meaning of the term 'at' is 'in, on, or ***near***,'" such that "at the thickened portion of the bridge portion" means "***near*** the thickened portion of the bridge portion." Pet. Reply 11 (citing PO Resp. 30–32; Ex. 1031, 77). According to Petitioner, Dr. Gall correctly identifies "Slater's transfixation screw hole as being adjacent to the bridge portion." *Id.* at 11–12 (citing Pet. 24; Ex. 1002 ¶ 141; Ex. 1027 ¶¶ 24–26). Petitioner also relies on the portion of the '085 patent stating that the transfixation screw hole "may be included in thickened section 136, adjacent to bridge portion 130." *Id.* at 12 (quoting Ex. 1001, 9:6–8). Petitioner contends that the '085 patent touts the advantages of this approach, "nowhere suggests that the transfixation screw hole is part of the bridge portion, as Patent Owner seems to suggest," and also describes the bridge portion as free of voids or holes, contrary to Patent Owner's assertion that Slater's bridge must include the transfixation screw hole. *Id.* (citing Ex. 1001, 8:32–41, 8:60–9:8). Petitioner also asserts, in the alternative, that "[e]ven if the Board allows Patent Owner to pursue a construction that contradicts the intrinsic evidence such that the claimed 'bridge portion' can include voids such as the transfixation screw hole,

141–142 of Dr. Gall's declaration). We do not consider this aspect of Patent Owner's argument as identifying any deficiency in the Petition and do not consider it further.

Slater still discloses this claim element" because "[t]he bridge portion would simply be expanded to include Slater's transfixation screw hole." *Id.* at 13 (citing Ex. 1027 ¶ 27). Petitioner provides an annotated version of Figure 1, reproduced below, to illustrate this position.



The annotated version of Figure 1, like the previous version in the Petition, identifies a "transfixation screw hole" in red with a red arrow pointing to an oval encompassing a hole. Pet. Reply 13. Unlike the annotated version of Figure 1 above, however, the yellow oval identifying the "bridge portion" encompasses the transfixation screw hole. *See id.*

In its Sur-reply, Patent Owner argues that Petitioner improperly changes its position from defining the bridge portion as not including the transfixation screw hole in the Petition to defining the bridge portion as including the transfixation screw hole in its Reply. PO Sur-reply 3–5 (citing Pet. 25; Pet. Reply 13; Ex. 1002 ¶¶ 138–142; Ex. 2003, 51:17–52:7). Patent Owner contends that "such a change in theory as to what the 'bridge portion'

is in Slater in reply should not be permitted." *Id.* at 5. Patent Owner also argues that Petitioner improperly construes "at" to mean "near" because "[s]uch an interpretation is contrary to the specification, which uses the phrase 'adjacent to' when it meant for a desired location to be near something." *Id.* at 5–7 (citing Ex. 1001, 9:6–8).

Based on our review of the arguments and evidence, Petitioner has the better position and establishes that Slater discloses "a transfixation screw hole disposed along the spine at the thickened portion of the bridge portion." We first address Petitioner's primary argument that relies on a bridge portion that does not include the transfixation screw hole. *See* Pet. 24–25. Petitioner's annotated version of Figure 1 and accompanying testimony of Dr. Gall identify the transfixation screw hole directly above, and adjacent to, the bridge portion. *See id.* at 25; Ex. 1002 ¶¶ 141–142. Because we view the limitation "at the bridge portion" as at least encompassing a hole *adjacent to* the bridge portion as the specification describes, we need not reach Petitioner's argument that we should construe "at the bridge portion" to mean "near the bridge portion." *See* Pet. Reply 11. As Petitioner correctly points out, the specification of the '085 patent describes "at the bridge portion" as "adjacent to" the bridge portion. *Id.* at 11–12 ("Dr. Gall's identification of Slater's transfixation screw hole as being adjacent to the bridge portion is consistent with the meaning of "at the thickened portion of the bridge portion" as described in the '085 patent. (EX1002, ¶141; Pet., 24; EX1027, ¶¶24-26). For example, the '085 patent explains that the transfixation screw hole "may be included in thickened section 136, ***adjacent to*** bridge portion 130." (EX1001, 9:6-8)."). The specification also supports this reading, and undermines any reading of "at the bridge portion"

to mean that the hole must be part of the bridge portion because the specification describes the bridge portion as free of voids and holes. Ex. 1001, 8:32–41, 8:60–9:8. Based on our review of the claim language and specification, "at the bridge portion" in claim 1 encompasses "adjacent to" the bridge portion because the specification refers to the transfixation screw hole as being "adjacent to" the bridge portion. *See* Ex. 1001, 8:32–41, 8:60–9:8. With that background in mind, we find that Petitioner establishes that Slater discloses a transfixation screw hole "at," or adjacent to, the bridge portion because the hole appears directly above and adjacent to the bridge portion. Pet. 24–25; Pet. Reply 11–12; Ex. 1002 ¶¶ 141–142; Ex. 1027 ¶¶ 24–26.

Although Patent Owner acknowledges that the specification uses the term "adjacent to" when describing the location of the transfixation screw hole, Patent Owner appears to take the implicit position that "adjacent to" does not describe an embodiment falling within the scope of "at the bridge portion." *See* PO Sur-reply 5–6. We are not persuaded by Patent Owner's approach because (1) it fails to explain why a hole "at the bridge portion" as the claim requires does not encompass what the specification describes as a hole "adjacent to" the bridge portion; (2) Patent Owner does not respond to Petitioner's argument that the specification stresses the advantages of a bridge portion free of voids and holes, which would preclude Patent Owner's implicit reading of "at the bridge portion" that requires a hole on or a part of the bridge portion; and (3) Patent Owner does not cite to any portion of the specification in support of its implicit reading of the claim that shows a transfixation screw hole going through the bridge portion of the plate. *See* PO Resp. 30–32; PO Sur-reply 3–7.

We also agree with Petitioner's alternative argument that if the bridge portion must include the transfixation screw hole, as Patent Owner appears to contend, that Slater discloses such a broadly defined bridge portion. *See* Pet. Reply 13; Ex. 1027 ¶ 27. Patent Owner complains that Petitioner's alternative argument in Reply contradicts Petitioner's argument in the Petition, but we disagree. PO Sur-reply 3–5. We view Petitioner's alternative argument as responsive to Patent Owner's argument in its Response that the bridge must include the transfixation screw hole, which Petitioner could not have reasonable foreseen given that the '085 patent specification describes the hole as adjacent to the bridge and that the bridge preferably lacks voids and holes. *See* Pet. Reply 11–13. Notably, Patent Owner does not argue against the merits of Petitioner's position—that Slater discloses a transfixation screw hole at the bridge portion as required by claim 1 if one defines Slater's bridge portion as encompassing the transfixation screw hole by expanding the area to include the hole. *See id.* at 13; Ex. 1027 ¶ 27; PO Sur-reply 3–5. Given the similarity between the location of the transfixation screw hole in relation to the bridge portion in the '085 patent and Slater, if the '085 patent discloses a bridge portion that includes the transfixation screw hole, then we agree with Petitioner that Slater discloses a bridge portion that includes a transfixation screw hole. *See* Ex. 1001, Fig. 3 (identifying transfixation screw hole 102 and bridge portion 130; Ex. 1005, Fig. 1 (identifying transfixation screw hole and bridge portion spanning the joint); Pet. Reply 13; Ex. 1027 ¶ 27.

Based on the foregoing, we find that Petitioner establishes by a preponderance of the evidence that Slater discloses "a transfixation screw hole disposed along the spine at the thickened portion of the bridge portion."

d. Undisputed Limitations

Petitioner argues that Slater discloses the remaining limitations of claim 1, including the following:

> a plate comprising:
>
> an elongate spine having a first end comprising at least one attachment point for attaching the first end to the first discrete bone on a first side of the joint, a second end comprising at least one attachment point for attaching the second end to the second discrete bone on a second side of the joint, and a bridge portion disposed between the first end and the second end, the bridge portion having a portion configured to span across the joint, . . .; and
>
> an aperture defining a transfixation screw hole disposed along the spine . . ., the transfixation screw hole comprising an inner surface configured to direct a transfixation screw through the transfixation screw hole such that the transfixation screw extends at a trajectory configured to pass through a first position on the first discrete bone and a second position on the second discrete bone once the plate is placed across the joint.

Ex. 1001, claim 1; Pet. 18–25. For these limitations, Petitioner provides an element-by-element analysis with supporting citations to Slater and the declaration of Dr. Gall. *See id.* (citing various portions of Exhibits 1002 and 1005). With the exception of the arguments we addressed above, Patent Owner does not argue that Petitioner fails to establish that Slater discloses these limitations. *See* PO Resp. 21–32.

We have reviewed Petitioner's arguments and evidence as to the undisputed limitations of claim 1 and find that Petitioner establishes sufficiently that Slater discloses these limitations for the reasons provided by

Petitioner. *See* Pet. 18–25.[10] We need not set forth formal findings as to the undisputed assertions by Petitioner.[11] We adopt Petitioner's arguments and evidence as to these limitations as our own. *See id.*

[10] The dissent finds that Petitioner fails to establish that Slater discloses the following limitation in claim 1: a "transfixation screw hole comprising an inner surface configured to direct a transfixation screw . . . at a trajectory." More specifically, the dissent finds that Petitioner "failed to provide any meaningful analysis or claim construction that would support a determination that 'at a trajectory' would encompass a transfixation screw hole allowing for a range of trajectories so that Slater's oblong opening 26 would meet the 'trajectory' element of the claims." *See* Dissent, 4. Notably, in this proceeding Patent Owner never argues that Slater fails to anticipate claim 1 because Slater fails to disclose this limitation, and we do not interpret Patent Owner's argument as to a different limitation in dependent claim 8 as applicable to claim 1. We do not view Petitioner's showing as to this limitation as deficient or that Petitioner was required to provide an express construction for "at a trajectory" in the Petition or Reply, especially when Patent Owner never raised the issue in its briefing and we never raised the issue prior to this Final Written Decision. Paper 7, 9 (emphasizing that "any arguments not raised in the [Patent Owner] response may be deemed waived"). Petitioner fully addresses the limitation and provides credible declarant support along with citations to relevant portions of Slater. *See* Pet. 24–25; Ex. 1002 ¶ 142 (citing Ex. 1005, 11:19–25 ("Formation 27 is *configured so that screw 25 is implanted at an angle* within a predetermined allowable angular range.") (emphasis added), 13:21–25 ("Formation 94 is *configured so that a fixation screw is directed at an angle* within a predetermined allowable angular range.") (emphasis added)).

[11] *See In re NuVasive, Inc.*, 841 F.3d 966, 974 (Fed. Cir. 2016) ("Although the Board did not make findings as to whether any of the other claim limitations (such as fusion apertures or anti-migration teeth) are disclosed in the prior art, it did not have to: NuVasive did not present arguments about those limitations to the Board . . . . The Board, having found the only disputed limitations together in one reference, was not required to address undisputed matters."); Paper 7, 9 (emphasizing that "any arguments not raised in the response may be deemed waived").

e. Conclusion as to Claim 1

Based on the foregoing, we find that Petitioner proves by a preponderance of the evidence that Slater discloses all of the limitations of independent claim 1 and, therefore, that Slater anticipates claim 1.

2. Claim 6

Claim 6 depends from claim 1 and further recites "wherein the first position resides on a compression side of the joint and the second position resides on a tension side of the joint." Ex. 1001, 13:7–9. Petitioner argues that Slater discloses the limitations of claim 6. Pet. 28–29 (citing Ex. 1002 ¶¶ 149–157). Petitioner contends that the '085 patent defines "neutral bending axis" as "[t]he line about which the force on joint 106 transitions from tension to compression. . . . In other words, neutral bending axis 118 defines the boundary line that separates the tension side of joint 106 from the compression side of joint 106." *Id.* at 28 (citing Ex. 1001, 6:4–10, Fig. 2). Petitioner argues that in "Slater, the axis of the bone plate approximates the direction of the neutral bending axis of the joint between the tibia 4 and talus 3" and that one of ordinary skill in the art "would understand that having a screw cross the joint at the midpoint of the joint would maximize the compressive forces applied across the joint and would cross from the compression side to the tension side of the joint." *Id.* (citing Ex. 1002 ¶¶ 152–156; Ex. 1010 ¶ 49; Ex. 1016 ¶ 35). According to Petitioner, in the context of Slater, "a force in the posterior direction on the foot would place both the tibia and ankle joint in compression on the posterior side of the joint" and "when walking, the first position in Slater on the first bone (tibia 4) will, at some point during the gait cycle, reside on a compression side of the joint and the second position in Slater on the second bone (talus 3) will

reside on a tension side of the joint." *Id.* (citing Ex. 1002 ¶ 157; Ex. 1005, Fig. 1).

Patent Owner argues that "Slater does not disclose a transfixation screw that passes through a compression side of the joint and then the tension side of the joint" because "the ankle joint, for which Slater's plates are designed, does not have a discrete tension and compression side." PO Resp. 33 (citing Ex. 2002 ¶¶ 95–99). Patent Owner contends that, unlike the joint referred to the in '085 patent, "the different portions of the ankle joint are subjected to cyclically changing compression and tension forces" and due to the changes in "force direction, a person of ordinary skill in the art would not refer to the ankle joint as one that has a tension side and a compression side." *Id.* (citing Ex. 2002 ¶¶ 98–99).

In its Reply, Petitioner argues that "Claim 6 does not require a 'discrete' tension side and compression side of the joint" and that "the claim is not expressly limited to a particular joint." Pet. Reply 14 (citing Ex. 1001, claim 6). Petitioner also contends that "[n]othing in the challenged apparatus claim excludes the common scenario where the sides of the joint switch from compression to tension." *Id.* (citing Ex. 1002 ¶ 157).

Based on review of the arguments and evidence, Petitioner establishes that Slater discloses the limitations of claim 6. Petitioner persuasively argues that the axis Slater's bone plate approximates the direction of the neutral bending axis of the joint and that one of ordinary skill in the art "would understand that having a screw cross the joint at the midpoint of the joint would maximize the compressive forces applied across the joint and would cross from the compression side to the tension side of the joint." Pet. 29 (citing Ex. 1002 ¶¶ 152–156; Ex. 1010 ¶ 49; Ex. 1016 ¶ 35). We are

also persuaded that Slater discloses a device that, when used by a patient walking, "a force in the posterior direction on the foot would place both the tibia and ankle joint in compression on the posterior side of the joint" and "the first position in Slater on the first bone (tibia 4) will, at some point during the gait cycle, reside on a compression side of the joint and the second position in Slater on the second bone (talus 3) will reside on a tension side of the joint." *Id.* at 29 (citing Ex. 1002 ¶ 157; Ex. 1005, Fig. 1). Dr. Gall's testimony credibly explains Slater's plate in operation and the compression and tension forces on the ankle joint. *See* Ex. ¶¶ 152–157.

Patent Owner does not directly dispute Dr. Gall's testimony as to how Slater's plate works in operation on an ankle, but does argue that "the ankle joint, for which Slater's plates are designed, does not have a discrete tension and compression side." PO Resp. 33 (citing Ex. 2002 ¶¶ 95–99). These arguments going to the meaning of "compression side" and "tension side" of the joint do not undermine Petitioner's showing here because, as Petitioner correctly points out, "[c]laim 6 does not require a 'discrete' tension side and compression side of the joint" and "is not expressly limited to a particular joint." Pet. Reply 14 (citing Ex. 1001, claim 6). The '085 patent describes how the plate works on a foot and how the metatarso-phalangeal joint 106 flexes, explaining that "the upper or 'dorsal' side of joint 106 will compress together, while the bottom or 'plantar' side of joint 106 will draw apart under tension," which "is generally true for any hinge-type joint." Ex. 1001, 6:1–10. Claim 6, and claim 1 from which it depends, however, do not limit the claimed plate to use on any particular joint or imply that the compression or tension sides of the joint must remain the same when using the claimed plate on a joint. *See id.* at claims 1, 6. Accordingly, although the sides of

the ankle joint in Slater may switch from compression to tension when a patient walks, nothing in the claims excludes these sides of the joint from meeting the "compression side" and "tension side" of the joint limitations in claim 6 at various points in time during the operation of Slater's plate on a foot. *See* Ex. 1002 ¶ 157 (identifying how Slater discloses a compression side and tension side during operation).

Based on the foregoing, we find that Petitioner proves by a preponderance of the evidence that Slater discloses all of the limitations of independent claim 6 and, therefore, that Slater anticipates claim 6.

3. Claims 8 and 9

Claim 8 depends from claim 1 and further recites "wherein: a central axis of the inner surface of the transfixation screw hole defines the trajectory; and the trajectory is configured to cross a neutral bending axis of the joint once the plate is placed across the joint." Ex. 1001, 13:14–18. Claim 9 depends from claim 8. *See id.* at 13:19–20. The "trajectory" claim 8 refers to is the screw trajectory referred to in claim 1. *Id.* at 12:50. According to Petitioner, "Slater discloses that the central axis of the inner surface of the transfixation screw hole (26 or 93) defines a trajectory configured to cross a neutral bending axis of the joint once the plate is placed across the joint." Pet. 31 (citing Ex. 1002 ¶¶ 160–163). Petitioner also contends that Slater's Figure 9 "discloses a central axis of the transfixation screw hole (26 or 93) that defines a trajectory and even identifies an angle associated with that trajectory relative to the axis of the bone plate." *Id.* at 32 (citing Ex. 1002 ¶ 162; Ex. 1005, Fig. 9). Finally, Petitioner argues that Slater's Figure 1 shows that "when the Slater plate is placed across the joint, the trajectory defined by the central axis of the inner

surface of the transfixation hole crosses the neutral bending axis of the joint." *Id.* (citing Ex. 1002 ¶ 163).

Patent Owner argues that "[w]ith respect to the claimed 'central axis,' Petitioners again picks and chooses disclosures from different plates in Slater since no single plate shows the elements as arranged in claim [8][12] of the '085 Patent." PO Resp. 34 (citing Ex. 2002 ¶ 102). Patent Owner contends that Petitioner improperly combines separate embodiments by relying on Figure 9 for its claim 8 argument. *See id.* (citing Ex. 2002 ¶ 167). Patent Owner also argues that Slater's "oblique hole is specifically designed to not have a central axis that defines the screw trajectory" because Slater describes the hole Petitioner relies on as the transfixation screw hole as "oblique screw portal allowing for various angles and the ability to incorporate more joints into the arthrodesis as required." *Id.* at 34–35 (citing Ex. 1005, 16:28–30; Ex. 2002 ¶ 103).

In its Reply, Petitioner argues that Slater's Figure 9 belies Patent Owner's argument that Slater's transfixation screw hole lacks a central axis because Figure 9 shows that "the central axis of Slater's transfixation screw hole forms a 34° angle to the longitudinal axis of the bone plate." Pet. Reply 14 (citing Ex. 1027 ¶¶ 29–30). Petitioner also argues that Figure 9 does not depict a "different plate" that runs afoul of any rule against relying on multiple embodiments. *See id.* at 15.

In its Sur-reply, Patent Owner argues that "Slater allows for 'adjustable orientation' in opening 26 based on 'a predetermined allowable

[12] Patent Owner references claim 2 here in its Response, but we view that reference as a typographical error because claim 2 does not have a "central axis" limitation and the argument appears under a heading for claim 8, which contains that limitation. *See* PO Resp. 34.

angular range,' which Petitioners identify as the transfixation screw hole." PO Sur-reply 10 (citing Pet. 24; Ex. 1005, 11:21–22, 12:23–25). Patent Owner also contends that "Slater fails to disclose a fixed opening for the transfixation screw hole" and that "[r]eading opening 26 as having a fixed trajectory is contrary to the disclosure of Slater." *Id.* at 10. According to Patent Owner, Slater knew how to describe other holes as having a fixed angle but deliberately described transfixation hole 26 using different language, making clear that "[o]pening 26 is meant to be a variable angle hole." *Id.* at 11 (Ex. 1005, 11:15–16, 11:19–22; Ex. 2003, 65:1–4).

We view Patent Owner's interpretation of Slater as more persuasive. *See* PO Resp. 34–35; PO Sur-reply 10–11; Ex. 2002 ¶ 103. Slater describes its hole 26, which Petitioner identifies as the transfixation screw hole, as allowing for "an angle within a predetermined allowable angular range." Ex. 1005, 11:20–23. As Patent Owner correctly points out, directly above this passage Slater describes a different opening having a "predetermined angle," underscoring that Slater's description of hole 26 as allowing for an "allowable range" indicates that it has no such predetermined angle. *See id.* at 11:15–16. Without any predetermined angle, hole 26 lacks a central axis that *defines* a screw directory as the claim requires.

Petitioner argues that Figure 9 shows "the central axis of Slater's transfixation screw hole forms a 34° angle to the longitudinal axis of the bone plate" but nothing in Slater supports Petitioner's position that the *central axis* of the hole forms the angle as the claim requires. Pet. Reply 14 (citing Ex. 1027 ¶¶ 29–30). Instead, in the context of Slater's description of the hole as "oblique" and allowing for a range of angles, the specific angle shown in Figure 9 may merely be one angle within a range of available

angles that are not defined by the central axis. *See* Ex. 1005, 11:20–23, 16:28–30 ("One significant advantage of the plate described herein is the oblique screw portal allowing for various angles and the ability to incorporate more joints into the arthrodesis as required."). Petitioner does not point to any disclosure in Slater that would suggest the hole shown in Figure 9 includes some different geometry than the same hole Slater describes elsewhere as allowing for a range of angles, such that the central axis of the hole does not "define" the angle of the screw trajectory as claim 8 requires. *See* Pet. 31–32; Pet. Reply 14–15.[13]

Based on the foregoing, we find that Petitioner does not prove by a preponderance of the evidence that Slater discloses all of the limitations of dependent claim 8, and therefore has not shown that claim 8 is unpatentable. Claim 9 depends from claim 8 and our findings as to claim 8 apply equally to claim 9. We find that Petitioner does not prove by a preponderance of the evidence that Slater anticipates claim 9 for the same reasons discussed above in the context of claim 8.

4. Claims 2, 3, and 7

Dependent claims 2, 3, and 7 ultimately depend from claim 1. *See* Ex. 1001, 12:54–13:22. Petitioner argues that Slater anticipates dependent claims 2, 3, and 7. *See* Pet. 26–27, 29–31, 33–34. Petitioner addresses each limitation in these claims, and cites to declarant testimony for support. *See id.* (citing Ex. 1002). With the exception of its arguments as to independent

[13] Because we find that Slater's Figure 9 does not disclose the limitations of claim 8 as Petitioner contends, we need not reach Patent Owner's argument that Petitioner improperly relies on Figure 9 and attempts to combine it with other embodiments in its anticipation analysis. *See* PO Resp. 34.

claim 1, Patent Owner does not address Petitioner's argument and evidence as to claims 2, 3, and 7. PO Resp. 35.

We have reviewed Petitioner's arguments and evidence as to the undisputed limitations of claims 2, 3, and 7 and find that Petitioner establishes that Slater discloses these limitations for the reasons provided by Petitioner. We adopt Petitioner's arguments and evidence as to these limitations as our own. *See* Pet. 26–27, 29–31, 33–34. Based on the foregoing, Petitioner proves by a preponderance of the evidence that Slater anticipates claims 2, 3, and 7.

F. Obviousness of Claims 4 and 5 over Slater and Weaver

Petitioner contends that claims 4 and 5 would have been obvious over Slater and Weaver. Pet. 34–37. Claims 4 and 5 ultimately depend from claim 1 and further require that the inner surface of the transfixation screw hole is configured to lockably engage the head of the transfixation screw (claim 4) and threaded to provide a locking interface with a transfixation screw (claim 5). Ex. 1001, 13:1–6. Petitioner alleges that Weaver discloses the limitations in claims 4 and 5 and that it would have been obvious to add Weaver's features to Slater's plate to provide a more secure fixation between the screws and the plate. Pet. 34–37; Ex. 1002 ¶¶ 170–178. Petitioner otherwise relies on its anticipation analysis for claim 1 discussed above. *Id.* at 34.

Patent Owner does not challenge Petitioner's assertion that Weaver discloses the additional limitations of claims 4 and 5 or that one of ordinary skill in the art would have been motivated to combine Slater and Weaver for the reasons provided by Petitioner. *See* PO Resp. 35. Instead, Patent Owner relies on its arguments against Petitioner's challenge to claim 1. *See id.* ("As

detailed above, Petitioners' Ground 1 Slater anticipation theory fails, therefore, Ground 2 fails for the same reasons.").

We have reviewed Petitioner's arguments and evidence as to the undisputed limitations of claims 4 and 5 and find that Petitioner establishes that the combination of Slater and Weaver discloses all of the limitations of claims 4 and 5, and that one of ordinary skill in the art would have been motivated to combine Slater and Weaver for the reasons provided by Petitioner. We adopt Petitioner's arguments and evidence as to these limitations as our own. *See* Pet. 34–37.

Once all relevant facts are found, the ultimate legal determination of obviousness involves the weighing of the fact findings to conclude whether the claimed combination would have been obvious to an ordinary artisan. *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1361 (Fed. Cir. 2017). Above, based on the full record before us, we provide our factual findings regarding (1) the level of ordinary skill in the art, (2) the scope and content of the prior art, (3) any differences between the claimed subject matter and the prior art; and (4) objective indicia of nonobviousness.

In particular, we find that (1) Petitioner's proposed level of ordinary skill in the art is consistent with the art of record; (2) Petitioner establishes that the combination of Slater and Weaver discloses or renders obvious all the limitations of claim 4 and 5; and (3) Patent Owner presents no evidence to establish any objective indicia of nonobviousness. Weighing these underlying factual determinations, Petitioner has shown, by a preponderance

of the evidence, that the combination of Slater and Weaver renders claims 4 and 5 obvious.

G. Anticipation by Falkner and Obviousness Based on Falkner and Arnould

As to Ground 3, Petitioner contends that Falkner anticipates claims 1–8. Pet. 37–52. As to Ground 4, Petitioner argues that dependent claim 9 would have been obvious over Falkner and Arnould. *Id.* at 53–56. Petitioner's argument under Ground 4 relies on Petitioner's predicate anticipation challenge under Ground 3 for claim 1 because claim 9 ultimately depends from claim 1. *Id.* Petitioner relies on Arnould under Ground 4 only for allegedly teaching certain transfixation angles encompassed by claim 9. *See id.* We focus our analysis on Petitioner's anticipation challenge to independent claim 1 because if Petitioner fails to establish that Falkner anticipates independent claim 1, Petitioner's anticipation challenge to dependent claims 2–8 and obviousness challenge to dependent claim 9 fall with its anticipation challenge to claim 1. *See* PO Resp. 45. Patent Owner argues that Falkner fails to anticipate because it does not disclose all of the limitations of claim 1. *Id.* at 36–43.

Having considered the parties' positions and evidence of record, we determine that Petitioner has not demonstrated by a preponderance of evidence that Falkner anticipates claim 1. Our analysis follows.

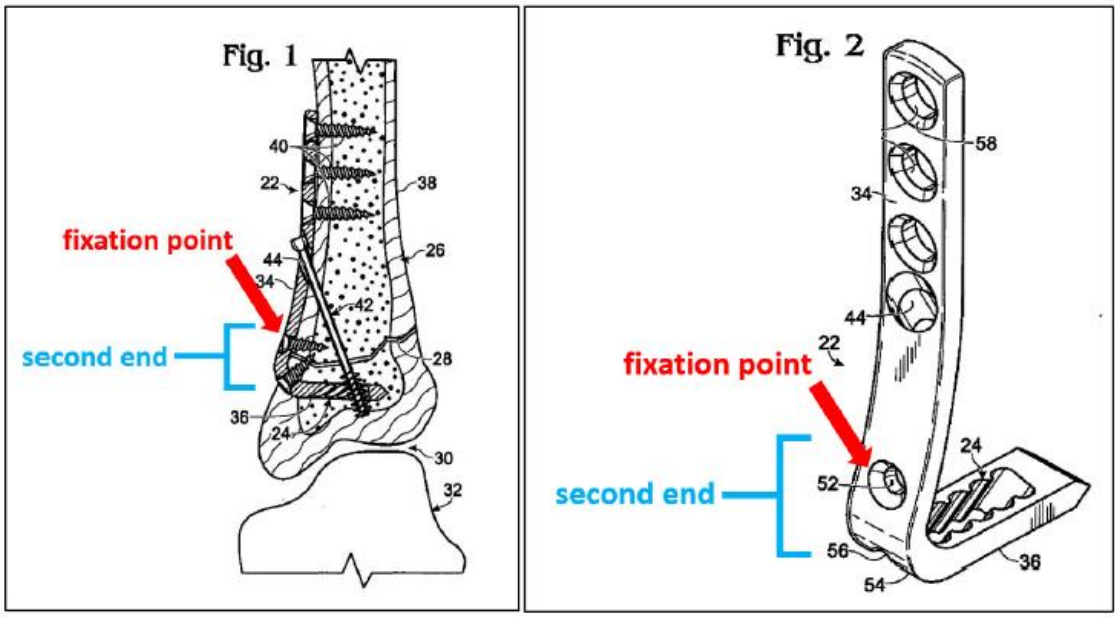
1. The Parties' Contentions

Petitioner alleges that Falkner discloses claim 1's preamble. Pet. 37–38. According to Petitioner, although Falkner's Figure 1 shows a plating system for fixing a single bone having a fracture, Falkner discloses that its bone plates may be used for any suitable "bone(s)" to fix fractures or other bone discontinuities. *Id.* at 38 (citing Ex. 1006 ¶¶ 21, 27–29, 62 (emphasis

omitted)). Petitioner also cites Falkner's disclosure that, in other examples, "plate 22 may span a joint, such as joint 30 between tibia 26 and talus 32, among others." *Id.* (emphasis omitted).

In a scenario where Falkner's plate spans the ankle joint, Petitioner contends that "plate 22 would be placed across joint 30 and bone screws 40 may be placed into first discrete bone (tibia 26) through the openings 50 at the first end of the plate 22." Pet. 39 (citing Ex. 1002 ¶ 184). According to Petitioner, this configuration would meet claim 1's "elongate spine" and "first end" limitations. *Id.* at 38–39 (citing Ex. 1002 ¶¶ 182–184).

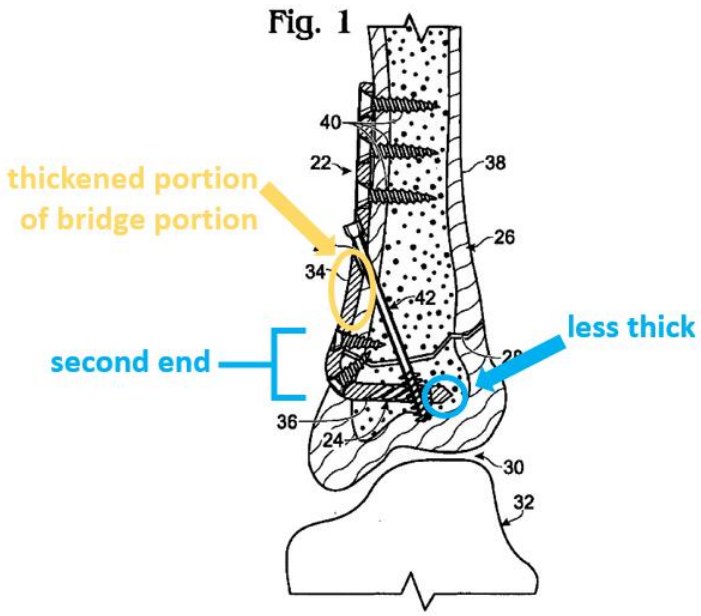
For claim 1's "second end" limitations, Petitioner cites to Figures 1 and 2 of Falkner (with annotations) as produced below.



Pet. 40 (citing Ex. 1006, Figs. 1–2). Petitioner's annotated version of Falkner's Figure 1 above shows a cross-sectional view of bone plate 22 secured to a single bone (tibia, 26), with external plate portion (34) secured to the tibia's external surface and a second (internal) plate portion (36) inserted within the tibia just below fracture (28). *Id.* Petitioner's annotated

version of Figure 2 is an isolated perspective view of the same plate further showing the plate's general "L" shape. *Id.* In both figures, Petitioner adds a blue bracket at a segment of external plate portion (36) encompassing a segment at or just above the curve of the L-shaped bracket, which bracketed segment Petitioner names the "second end." *Id.* Petitioner also annotates opening (52) in both figures and, with red arrow and text, names that opening a "fixation point." *Id.* With that context in mind, Petitioner then argues that, "[i]f the Falkner plate was used to span a joint between tibia and talus 32 . . . a bone screw 40 may be placed into the second discrete bone (talus 32) through the opening 52 at the second end of the plate 22." *Id.* at 40–41 (citing Ex. 1002 ¶ 185).

Turning to claim 1's bridge portion and the requirement that the bridge portion have a depth or thickness greater than a portion of the first or second ends, Petitioner provides another annotation to Falkner's Figure 1. Pet. 42–43. This annotated figure is reproduced below.



Id. at 43; Ex. 1006, Fig. 1. This annotated version of Figure 1 of Falkner, above, again shows the Falkner's plate attached to the tibia. Petitioner designates another segment of Falkner's exterior plate portion (34) as being a "bridge portion," which Petitioner marks with a yellow oval. Pet. 43. Petitioner also indicates (with yellow arrow and text) that this alleged "bridge portion" has a "thickened portion." *Id.* This alleged bridge portion or section is immediately above the blue-bracketed "second end" as discussed above. Here, however, Petitioner identifies a tip of internal plate portion (36) (i.e., the portion of the plate inserted within the tibia) as "less thick," which Petitioner highlights with a blue circle, arrow, and text. *Id.* Petitioner contends that the thickness at the bridge portion appears "thicker" when compared to the tip of internal plate portion 36 inserted into the bone that appears "less thick." Pet. 42–43. Petitioner also relies on Falkner's statement that the "thickness of the plates may vary between plates and/or within plates, according to the intended use," with thicker regions increasing the strength of the plate. *Id.* at 42 (quoting Ex. 1006 ¶ 35). From this, Petitioner argues that "a thickened portion of the claimed bridge portion has a thickness greater than at least a portion of a thickness of either the first end or the second end." *Id.* at 43 (citing Ex. 1002 ¶ 188).

For the transfixation screw hole limitations of claim 1, Petitioner cites Falkner's oblique opening (44) and threaded fastener (42) configured for insertion into said opening. Pet. 43–45. According to Petitioner, "when the Falkner bone plate is configured to span a joint 30 such as tibia 26 and talus 32," oblique opening 44 "is a transfixation screw hole comprising an inner surface configured to direct a transfixation screw (threaded fastener 42) through the oblique opening 44" such that transfixation screw 42 extends at

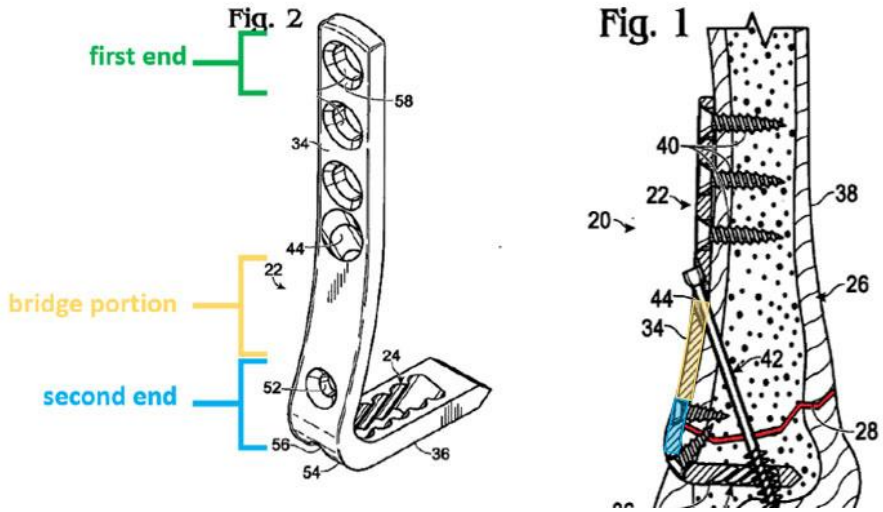
a trajectory configured to pass through the tibia 26 and talus 32 "once the plate is placed across the joint 30." *Id.* at 44–45 (citing Ex. 1002 ¶ 190; Ex. 1006, Fig. 2).

Patent Owner makes three main arguments with regard to independent claim 1. PO Resp. 36–43. First, Patent Owner argues that Falkner fails to disclose a system for securing two discrete bones together across a joint between the two bones. *Id.* at 36–38. Patent Owner contends that Falkner's plate is not designed to secure the two discrete bones across a joint and further contends that "[t]o make a Falkner-type plate that crosses a joint would require extensive modification." PO Resp. 37–38 (citing Ex. 2002 ¶ 109).

Second, Patent Owner argues that Falkner fails to disclose a "second end" that includes "at least one attachment point for attaching the second end to the second discrete bone on a second side of the joint." PO Resp. 39–41. Patent Owner argues that Petitioner improperly relies on hole 52 as the "attachment point" of the "second end" because "the identified attachment point is not on the second bone (or in the case of the Falkner disclosure, on the second part of the fractured bone), but rather above the bone discontinuity on the same side of the bone as the identified first attachment point." *Id.* at 39–40 (citing Ex. 2002 ¶ 112). According to Patent Owner, "[e]ven assuming Dr. Gall is correct that the Falkner blade-plate could simply be shifted down to cross the tibia/talus joint, the second end attachment point that Dr. Gall identifies would actually be on the first bone (i.e., the same side of the joint as the first end attachment point). *Id.* at 40.

Third, Patent Owner contends that Petitioner's modified version of Falkner's plate does not have any portion configured to span across the

bridge portion. *Id.* at 41–43. Patent Owner explains that even if the Falkner plate can be moved across the joint, "the joint would be at the same part of the plate that the bone fracture intersects in Figure 1." *Id.* at 41 (citing Ex. 2002 ¶ 114); *see also id.* ("[T]he *Falkner* blade-plate 'bridge portion' that Petitioners rely upon would not cross the joint at all."). To illustrate that point, Patent Owner references and compares Dr. Gall's annotated image of Falkner's figure 1, shown below on the right, and Mr. Sommers annotated image of Falkner's figure 2, shown below on the left.



Id. at 42 (citing Ex. 1006 Fig. 1 (Dr. Gall's annotations from Ex. 1002 ¶ 186); Ex. 2002 ¶ 118 (depicting Ex. 1006, Fig. 2 (annotated))). Figure 1 shows a sectional view of a bone plate according to Falkner as it would be applied to a bone. Ex. 1006 ¶ 8. Figure 2 shows a perspective view of a bone plate according to Falkner in the absence of fasteners and bone. *Id.* ¶¶ 9, 67. Patent Owner contends that the figures show that Falkner's plate would cross the joint at the portion of the plate Petitioner identifies as the "second end." PO Resp. 41–42. Patent Owner further explains that, "[a]s can be seen from Mr. Sommers' modified version of Figure 1, the bone discontinuity shown in red actually intersects the second end Dr. Gall has

identified, highlighted in blue, just below the second end fixation point Dr. Gall relies upon, not his bridge portion shown in yellow." *Id.* at 42 (citing Ex. 2002 ¶ 119). Thus, according to Patent Owner, the Falkner plate's alleged bridge portion does not cross the bone discontinuity in Figure 1. Patent Owner further argues that Petitioner recognizes this failing, and improperly shifts its designation of the "bridge portion" in Falkner in an attempt to meet the limitation. *See id.* at 42–43 (citing Ex. 1002 ¶ 186).

In its Reply, Petitioner responds that "Falkner unambiguously teaches that ***the same bone plate*** shown in Figure 1 and described in the specification 'may be positioned on and/or in any suitable bone(s) to span any natural or artificial discontinuity within a bone or between bones.'" Reply 15–16 (citing Ex. 1006 ¶¶ 21, 28–29, 33–34, 62). Petitioner cites to a new declarant, Dr. Holmes, in support of its position. *See id.* at 17–18 (citing Ex. 1028). Petitioner argues that extensive modifications to the Falkner plate would not be required and refers to Dr. Holmes' testimony who believes that "Falkner enables a POSITA to use its plate for joint fusion ***without any design modifications***." *Id.* at 17 (citing Ex. 1028 ¶¶ 19–20, 25–36). Instead, Petitioners cite to Dr. Holmes who describes a procedure whereby:

> "surgeons typically shave straight (transversely) across the distal surface of the tibia to create a flat surface to oppose with the flat surface of the dorsal surface of the talus" to help create a biomechanically stable joint for fusion. (Ex.1028, ¶¶31-32). The bones are then positioned to create the optimal biomechanical alignment for proper gait following the fusion. (*Id.*, ¶33). The Falkner plate would be positioned to span the joint in the range between the angled screw hole and the internal blade to optimize purchase and efficacy. (*Id.*, ¶35). Depending on patient anatomy, the plate could be contoured with plate benders. (*Id.*, ¶34).

Id. Petitioner contends that Falkner expressly enables a person of ordinary skill in the art "to use its bone plate for joint fusion, and teaches all of the structural limitations set forth in the challenged claims." *Id.* at 18.

In its Sur-Reply, Patent Owner responds that Falkner does not disclose the modifications required to anticipate the challenged claim and instead, Petitioner improperly relies heavily on Dr. Holmes' new testimony on how the plate could have been modified. *See* Sur-Reply 11–14. Patent Owner also contends that the modifications to Falkner described in Dr. Holmes' testimony amount to more than slight modifications, and "seemingly admit[s] that the theory of anticipation raised in the Petition is obviousness in disguise." *Id.* at 18. Patent Owner also explains the various ways in which the modifications of the Falkner plate by Dr. Holmes allegedly lack support. *See id.* at 14–22; *see also id.* at 22 ("[T]he extensive modifications required for Falkner's plate to be used across a joint go beyond what reasonably could be anticipation.").

2. Discussion

Having considered the parties' positions and evidence of record, summarized above, we determine that Patent Owner has the better position. First, we agree with Patent Owner that Petitioner's reliance on the new declaration from Dr. Holmes goes beyond the bounds of permissible argument and evidence in reply. *See* PO Sur-reply 11–14. The 23-page declaration goes into detail as to how a surgeon would use Falkner's plate when spanning two bones. *See* Ex. 1028 ¶¶ 20–36. While some of these opinions are certainly responsive to Patent Owner's arguments and the testimony of Mr. Sommers, much if not all of the material could have been included with the Petition. Falkner contains readily apparent shortcomings

when it comes to its two-bone embodiment because it devotes only a sentence, and no figures, to this possibility. *See* Ex. 1006 ¶ 21. Petitioner should have foreseen the potential shortcomings of Falkner as an anticipatory reference and included a declaration from Dr. Holmes with the Petition. *See* Consolidated Trial Practice Guide (Nov. 2019) ("CTPG"), 73 ("Petitioner may not submit new evidence or argument in reply that it could have presented earlier, e.g. to make out a prima facie case of unpatentability."), 74–75 ("It is also improper for a reply to present new evidence (including new expert testimony) that could have been presented in a prior filing."). Without the supporting testimony of Dr. Holmes, Petitioner's arguments in its Reply lack adequate support and Patent Owner's arguments in its Response are largely unrebutted.

Second, we agree with Patent Owner that Falkner does not disclose a plate arranged as claimed. PO Resp. 48–49; Ex. 1006, Fig. 1. Falkner's Figure 1 shows a plate *not* configured to secure two discrete bones (e.g., the tibia and talus) across an intermediate joint between those bones. Ex. 1006, Fig. 1. This is plain from the cross-sectional anatomical views of the tibia, joint, and talus shown in the figure itself. *Id.* To make the plate so configured as claimed would require at least some level of redesign or modification. Those might be simple, even arguably obvious, changes for the person of ordinary skill in the art in light of Falkner and its overall teachings, but Petitioner's challenge is based on anticipation. Indeed, Petitioner's and Dr. Gall's repeated invocation of how Falkner's plate, if used in the hypothetical joint-spanning context, "would have been" configured underscores the lack of teaching in Falkner and rings of obviousness, not anticipation. *See, e.g.*, Ex. 1002 ¶¶ 185 ("If the Falkner

plate was used to span a joint between tibia 26 and talus 32, the plate 22 *would have been* placed across the joint 30 and bone screws 40 *would have been* placed into [the bones] . . . and a bone screw 40 *would have been* placed into second discrete bone (talus 32) . . . ."), 187.

We recognize that Falkner discloses that its plates may be designed to traverse a joint between bones. *See, e.g.*, Ex. 1006 ¶¶ 21, 23, 29. But Falkner provides a dearth of detail about such a hypothetical plate's actual design. On this record, it appears to us that modifying the plate of Figure 1 to render it suitable to, for example, spanning a joint between the tibia and talus would require the person of ordinary skill in the art to make distinct design choices beyond any embodiment explicitly described in Falkner. Even then, it is not a foregone conclusion that all the claim limitations would be met. But, here again, our concern is that such a theory drifts from anticipation—a doctrine still rooted in "strict identity"[14]—to obviousness.

As one example of the problems with Petitioner's arguments, we note that Petitioner cites a portion of Falkner's plate that appears to be close to the middle of the plate and characterizes that portion as a "second end." Pet. 40. Yet, when wanting to show that the second end of the plate is thinner than the bridge, Petitioner points to another portion of the plate—the distal-most tip of the plate, which is actually inserted in the bone itself. *Id.* at 43. Petitioner's position on what constitutes the "second end" of Falkner lacks a degree of clarity and consistency. Petitioner may be cherry-picking certain features of a single-bone embodiment to keep, which features it sees as favorable to its anticipation position, while purporting to modify other

[14] *Trintec Indus., Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 1296 (Fed. Cir. 2002).

portions of that embodiment in order to render it suitable for a different attachment across multiple bones.[15] Such picking and choosing without adequate explanation undermines the credibility of Petitioner's assertions and suggests that Falkner's plate requires modifications to meet the claim limitations, which is indicative of obviousness. As a whole, we find Patent Owner's arguments and evidence on these issues more persuasive, and the related declarant testimony of Mr. Sommers more credible, and we adopt it as our own findings on these issues. *See* PO Resp. 36–43; PO Sur-reply 14–22.

As noted above, Petitioner's anticipation challenge to dependent claims 2–8 and obviousness challenge to claim 9 based on Falkner and Arnould rely on Petitioner's predicate anticipation analysis as to independent claim 1, which we find unpersuasive for the reasons provided above. *See* Pet. 45–56. For the reasons above, we determine that Petitioner has not demonstrated by a preponderance of evidence that any of claims 1–8 are anticipated by Falkner or that claim 9 would have been obvious over Falkner and Arnould.

[15] As a further example, Petitioner identifies opening (52) in Falkner's plate in Figure 1 as the alleged attachment point on a second end of the plate as claimed. Pet. 40. But, as described in Falkner, opening (52) and its corresponding bone screw is fixed on the *same side* of the bone discontinuity (fracture) as the plate portion Petitioner identifies as the plate's first end. Ex. 1006, Fig. 1. Inasmuch as a joint is simply another bone discontinuity in Falkner, Petitioner asserts, with minimal explanation, that a screw would have been placed through opening (52) to secure a second bone (e.g., talus) on the *opposite side* of the joint relative to the plate's first end when the plate is modified for use in this different context. *Id.* at 40–41; Ex. 1002 ¶ 185.

H. Obviousness Based on Arnould and Slater and Obviousness Based on Arnould, Slater, and Weaver

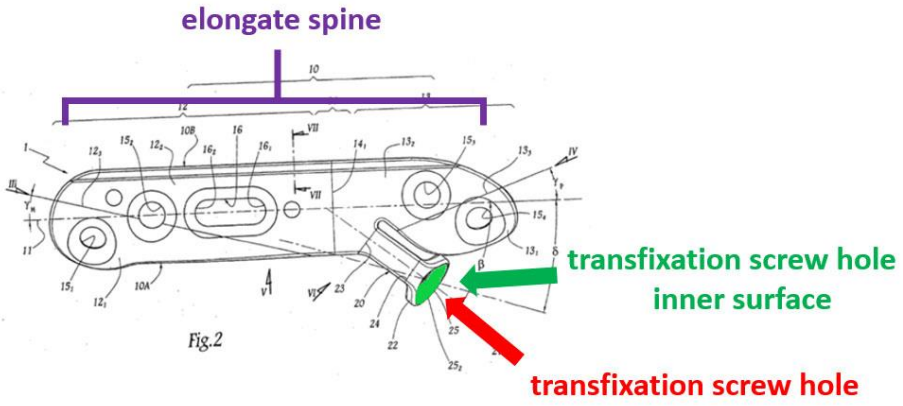
As to Ground 5, Petitioner argues that claims 1–3 and 6–9 would have been obvious over Arnould and Slater. Pet. 56–68. As to Ground 6, Petitioner argues that dependent claims 4 and 5 would have been obvious over Arnould and Slater, in further view of Weaver. Pet. 69–70. Petitioner's reliance on Weaver here is substantially the same as for Ground 2—relying on Weaver's screw locking features and reasons to add them. *Id.* Petitioner's argument under Ground 6 relies on Petitioner's predicate challenge under Ground 5 (which includes claim 1) because claims 4 and 5 ultimately depend from independent claim 1. *Id.* We focus our analysis on Petitioner's challenge to independent claim 1 because if Petitioner fails to establish that claim 1 would have been obvious over Arnould and Slater, Petitioner's obviousness challenges to the dependent claims fall with its challenge to claim 1. *See* PO Resp. 51.

Having considered the parties' positions and evidence of record, we determine that Petitioner has not demonstrated by a preponderance of evidence that claim 1 would have been obvious over Arnould and Slater. Our analysis follows.

1. The Parties' Contentions

Petitioner contends that "Arnould discloses each and every element of independent claim 1 except" the element requiring a bridge portion with a thickened section thicker than either the first or second end. Pet. 56 (citing Ex. 1002 ¶ 235). For that missing limitation, Petitioner turns to Slater, which Petitioner argues discloses a thicker bridge portion. *Id.* at 56–57. Petitioner argues that a POSA "would have been motivated to modify the bone plate of Arnould with the thickened bridge portion of Slater in order to

strengthen the bone plate in the region of the bone plate spanning across the joint." *Id.* at 60. As to the limitation in claim 1 requiring "a transfixation screw hole disposed along the spine" of the plate, the Petition relies solely on Arnould for this element. Pet. 62. Petitioner provides an annotated version of Arnould's Figure 2, reproduced below, to illustrate its position.

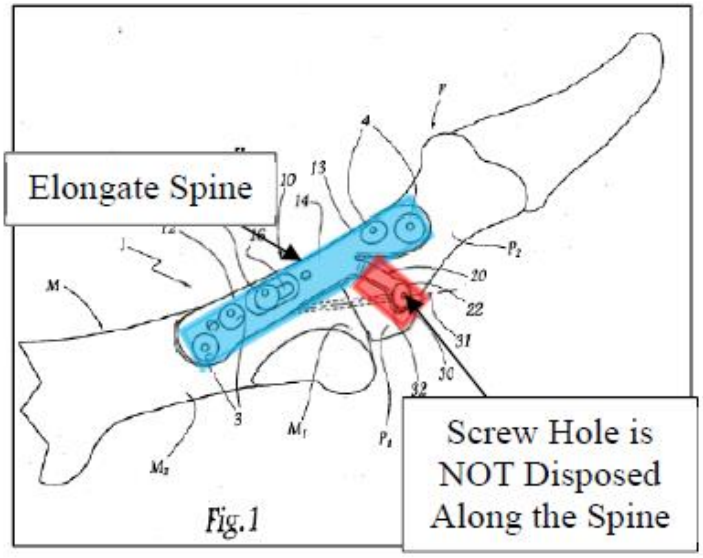


Id. The annotated version of Arnould's Figure 2 identifies a bracketed "elongate spine" in purple at the top of the figure and a "transfixation screw hole" in red at the bottom right of the figure with an arrow pointing to hole 25. *See id.* According to Petitioner,

> Arnould includes an aperture defining a transfixation screw hole (through-hole 25) disposed along the spine (plate body 10) at the thickened portion of the bridge portion (as modified by Slater), the transfixation screw hole (through-hole 25) comprising an inner surface (throughhole edge 25_2) configured to direct the transfixation screw (screw 30) through the transfixation screw hole (through-hole 25) such that the transfixation screw extends at a trajectory (longitudinal axis 31) configured to pass through a first position on the first discrete bone (phalanx P)and a second position on the second discrete bone (metatarsal M) once the plate is placed across the joint.

Id. (citing Ex. 1002 ¶¶ 243–244; Ex. 1008 ¶¶ 6, 8, 23, 26, 27, 32; claims 1, 3; Figs. 1, 2, 5).

Patent Owner contends that Arnould in view of Slater fails to teach the elements of "a transfixation screw hole disposed along the spine." PO Resp. 48–50. Patent Owner contends that the alleged transfixation screw hole of Arnould is a "through-hole 25 (at the end of leg 20[)] . . . [and] is not disposed on the spine, but part of a separate leg piece that extends off the spine." *Id.* at 48. The following annotated version of Arnould's Figure 1 illustrates that point.



Id. at 48 (citing Ex. 1008, Fig. 1; Ex. 2002 ¶ 137). The annotated version of Arnould's Figure 1, above, shows plate (1) having plate body (10) attached to the metatarso-phalangeal bones and joint, and Patent Owner has highlighted in blue the plate's longitudinal body, which Patent Owner calls the "Elongate Spine." *Id.* In red, Patent Owner highlights leg (20), which extends downward from the longitudinal side of the plate body near the plate's midsection. *Id.* Patent Owner also adds an arrow identifying a screw hole at the end of the leg (20), which Patent Owner adds "is NOT Disposed

Along the Spine." *Id.* According to Patent Owner, "there is no reason in view of Arnould to locate a transfixation screw hole along the spine . . . because the explicit advantage of Arnould is that the leg and screw were moved off the spine." *Id.* at 49 (citing Ex. 1008 ¶ 6; Ex. 2002 ¶ 140).

In its Reply, Petitioner argues that "[t]he claim language nowhere equates the 'elongate spine' with the center line of the bone plate." Pet. Reply 25. Petitioner also argues that "Arnould contemplates that various portions of the plate may be bent or curved to conform to the patient's bones." *Id.* at 26. According to Petitioner, "[t]hat Arnould's leg may be bent along two different fold lines to wrap around the phalangeal epiphysis does not mean that the leg is no longer part of the elongate spine." *Id.*

In its Sur-reply, Patent Owner argues that Petitioner fails "to address the express teaching of Arnould that describes 'leg 20'—which the Petition alleges is the claimed 'bridge portion'—being 'located vertically below [the] plate body.'" PO Sur-reply 24 (citing Ex. 1008 ¶ 23). According to Patent Owner, "[s]omething cannot be both along the body (or in the case of the claims, the spine) and below it." *Id.* at 25.

2. Discussion

We have considered Petitioner's arguments and evidence of record, but find Patent Owner to have the better position. In particular, we agree with Patent Owner that Arnould in view of Slater fails to teach or suggest a transfixation screw hole to be deposed along the spine. PO Resp. 48–50. As Patent Owner correctly points out, Arnould discloses that leg (20) "is meant to wrap around the bone and is located vertically below the plate body," which is evident with reference to Figure 1 above. Ex. 1008 ¶ 23. Because

leg 20 extends vertically below the elongate spine, through-hole 25 located at the end of leg 20 resides below and distanced from the elongate spine. *See id.*; Ex. 2002 ¶¶ 138–139. The fact that Arnould touts an advantage stemming from implanting a screw through through-hole 25 supports the testimony of Mr. Sommers that one of ordinary skill in the art reading Arnould would not view through-hole 25 as disposed along the spine. *See* Ex. 1008 ¶ 6; Ex. 2002 ¶ 140.

We have considered but are not persuaded by Petitioner's arguments. For example, Petitioner argues in Reply that "Patent Owner incorrectly re-writes 'disposed along the spine' as 'disposed on the spine,' and improperly narrows the term 'spine' to mean the center line of the bone plate," but we do not view Patent Owner's arguments as that restrictive. *See* Pet. Reply 25 (citing PO Resp. 48). Rather, we agree with Patent Owner that "[s]omething cannot be both along the body (or in the case of the claims, the spine) and below it." Sur-reply 25. Patent Owner does not and need not argue that "disposed along the spine" must be read to mean "disposed on the spine" in order to support its argument because Arnould's spacing of through-hole 25 some distance away from the spine at the end of leg 20 does not satisfy any reasonable interpretation of "along the spine." Petitioner does not provide a supported claim construction for "along the spine" that would support its argument that the limitation encompasses a structure like that Arnould discloses.

Because Petitioner fails to establish that Arnould discloses a transfixation screw hole "disposed along the spine" as required by claim 1, Petitioner fails to establish that claim 1 would have been obvious over Arnould and Slater. As noted above, Petitioner's challenge to dependent

claims 2–3 and 6–9 based on Arnould and Slater and claims 4 and 5 based on Arnould, Slater, and Weaver rely on Petitioner's predicate analysis as to independent claim 1, which we find unpersuasive for the reasons provided above. Pet. 56–68, 69–70. Accordingly, we determine that Petitioner has not demonstrated by a preponderance of evidence that any of claims 2–3 and 6–9 would have been obvious based on Arnould and Slater or that either of claims 4 and 5 would have been obvious based on Arnould, Slater, and Weaver.

CONCLUSION[16]

In summary:

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–3, 6–9	102(b)	Slater	1–3, 6, 7	8, 9
4, 5	103(a)	Slater, Weaver	4, 5	
1–8	102(b)	Falkner		1–8
9	103(a)	Falkner, Arnould		9
1–3, 6–9	103(a)	Arnould, Slater		1–3, 6–9
4, 5	103(a)	Arnould, Slater, Weaver		4, 5
Overall Outcome			1–7	8, 9

[16] Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–7 of the '085 patent are determined to be unpatentable;

FURTHER ORDERED that claims 8 and 9 of the '085 patent are not determined to be 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.

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Paper 46
Date: March 15, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

STRYKER CORPORATION and
WRIGHT MEDICAL TECHNOLOGY, INC.,
Petitioner,

v.

OSTEOMED LLC,
Patent Owner.

IPR2021-01450
Patent 8,529,085 B2

Before SHERIDAN K. SNEDDEN, RICHARD H. MARSCHALL, and JAMIE T. WISZ, *Administrative Patent Judges.*

SNEDDEN, *Administrative Patent Judge*, dissenting-in-part.

I am pleased to join the Majority Decision ("Dec.") with regard to the determinations reached regarding Petitioner's Falkner and Arnould challenges. Dec. 43–59. I also join the Majority Decision with regard to determinations reached regarding Petitioner's challenge of claims 8 and 9 as anticipated by Slater. *Id.* at 37–39. I do not join the Majority Decision with regard to the unpatentability of challenged claims 1–6 and 7 based on Slater or the combination of Slater and Weaver. Specifically, having considered

the parties' positions and evidence of record, I determine that Petitioner has not demonstrated by a preponderance of evidence that claims 1–3, 6, and 7 are anticipated by Slater. Additionally, I determine that Petitioner has not demonstrated by a preponderance of evidence that claims 4 and 5 would have been obvious over the combination of Slater and Weaver. Accordingly, I respectfully dissent-in-part.

Claim 1 requires a "transfixation screw hole comprising *an inner surface configured to direct a transfixation screw . . . at a trajectory*. Ex. 1001, cl. 1 (emphasis added). Claim 8 further limits that "trajectory" element of claim 1 and further specifies that "a central axis of the inner surface of the transfixation screw hole defines the trajectory." *Id.* at cl. 8. Petitioner contends that openings 26 or 93 disclosed in Slater are a transfixation screw hole that satisfies the "trajectory" element of the claims. Pet. 24–25. Specifically, with reference to claim 1, Petitioner contends that

> While Slater does not explicitly identify openings 26 and 93 as "transfixation screw holes," Slater's disclosure makes it clear that openings 26 and 93 each receive a fixation screw that passes through those openings so that the screw is implanted at an angle. (EX1005, 11:19–21, 13:21–24).

Pet. 24.

In its Response, Patent Owner contends, in the context of claim 8, that,

> the hole Dr. Gall identifies as the transfixation screw hole of Slater again is described as an "oblique screw portal allowing for various angles and the ability to incorporate more joints into the arthrodesis as required." (Ex. 1005, 16:28-30). In other words, the oblique hole is specifically designed to not have a central axis that defines the screw trajectory. (Ex. 2002, ¶ 103). As such, Slater does not anticipate claim 8 of the '085 Patent.

PO Resp. 34–35; *see also id.* at 9 (Patent Owner arguing generally that "[t]he plate described in the '085 Patent also includes a hole at a fixed angle relative to the plate designed to receive a 'transfixation screw.'" (citing Ex. 2002 ¶ 49 (same))). In its Sur-reply, Patent Owner contends that,

> *Slater* fails to disclose a fixed opening for the transfixation screw hole. Reading opening 26 as having a fixed trajectory is contrary to the disclosure of *Slater*. When *Slater* desired for the trajectory of a certain hole to be fixed, it described the hole as such: "formation 13 of opening 12 directs screw 10 at a predetermined angle which optimises fixation." (Ex. 1005, 11:15–16). Opening 26 is meant to be a variable angle hole. (Ex. 1005, 11:19–22 ("an angle within a predetermined allowable angular range"); *see also* Ex. 2003, 65:1–4).

Sur-Reply 11.

Having considered the parties' positions and evidence of record, summarized above, I find that Petitioner fails to sufficiently support its position that Slater discloses a "transfixation screw hole comprising *an inner surface configured to direct a transfixation screw . . . at a trajectory*" as required by the claims. As an initial matter, I note that it is undisputed that Slater's opening 26 is meant to be a variable angle hole and not an opening configured to direct a screw at a particular angle or trajectory. *See* Ex. 1005, 11:19–22 ("an angle within a predetermined allowable angular range"); *see also* Ex. 2003, 65:1–4 (Dr. Gall agreeing that each of the angles depicted by phantom screws shown in Figure 1 of Slater are achieved through the same screw hole 26); Ex. 2002 ¶ 55 ("[Slater's] hole that allows the screw to pass through at multiple angles is described as 'slotted,' which means to me that at least a portion of the hole towards the inner surface of the plate is oblong in one direction in order to allow the screw 25 to pass through at multiple angles"); Sur-Reply 11.

Petitioner, however, has failed to provide any meaningful analysis or claim construction that would support a determination that "at a trajectory" would encompass a transfixation screw hole allowing for a range of trajectories so that Slater's oblong opening 26 would meet the "trajectory" element of the claims. Moreover, I am unable to discern any support from the prosecution history or specification of the '085 patent that would inform a person of ordinary skill in the art that the recitation of "a transfixation screw hole comprising *an inner surface configured to direct the transfixation screw . . . at a trajectory*" encompasses a transfixation screw hole configured to operate so as to accommodate a range of angles. Pet. 6–10, Ex. 1004. Rather, the specification of the '085 patent repeatedly describes the disclosed plate system as having a transfixation screw hole where it is the inner surface of that hole that is configured to direct a screw at a trajectory, which, according to Mr. Sommers, is language a person of ordinary skill in the art would understand to describe a degree of precision around a single fixed angle. Ex. 1001, 1:43–63; Ex. 2002 ¶ 49; PO Resp. 18–19. For example, the specification describes how "increased plate thickness around transfixation screw hole 102 may also enable transfixation screw hole 102 *to be machined* into bone plate 100 *at an angle* relative to the top surface of bone plate 100." Ex. 1001, 9:13–17 (emphasis added). In other embodiments, the central axis of the inner surface of the transfixation screw hole defines the trajectory. *Id*. at 1:64–67; 6:45–66. By comparison, other holes in the disclosed plates are not disclosed with the same level of effort toward precision when describing the trajectory of a screw. Indeed, the specification even includes a description of an oblong opening such as the one found in Slater, described as compression hole 132. *Id*. at 9:20–51.

Petitioner's attempt to interpret the recitation of "a transfixation screw hole comprising *an inner surface configured to direct the transfixation screw . . . at a trajectory*" to encompass Slater's opening 26, configured to operate so as to accommodate a range of angles, attempts to add ambiguity to the scope of the claim without any meaningful attempt at claim construction. Pet. 24. That is improper. *See* 37 C.F.R. § 42.104(b)(3) (the petition must state "[h]ow the challenged claim is to be construed"). A petitioner cannot comply with that obligation by simply implying certain constructions in the Petition without providing any legal or factual support for the constructions. *See* 35 U.S.C. § 312 ("the petition identifies, in writing and with particularity, each claim challenged, the grounds on which the challenge to each claim is based, *and the evidence that supports the grounds for the challenge to each claim*.") (emphasis added). The Office's trial practice guide further provides that "where a party believes that a specific term has meaning other than its plain meaning, the party should provide a statement identifying a proposed construction of the particular term and where the disclosure supports that meaning." *See* Trial Practice Guide, 77 Fed. Reg. at 48,764. (emphasis added).

In this case, to support its challenge relying on Slater, it was necessary for Petitioner to propose a construction for "at a trajectory" and explain, under any construction, how the inner surface of Slater's oblong opening 26 is configured to direct a transfixation screw "at a trajectory," which it failed to do. *See* Pet. 11 ("Petitioners have applied the ordinary and customary meaning of each claim term throughout the Petition in light of the 085 patent specification and file history."). For example, it was at least necessary, on this record, for Petitioner to explain how the ordinary and customary

meaning of the phrase "at a trajectory" encompasses an oblong opening capable of accommodating a range of trajectories.

In view of the above, I determine that Petitioner has failed to meet its burden to show that Slater discloses "the transfixation screw hole comprising *an inner surface configured to direct the transfixation screw . . . at a trajectory*." Accordingly, I would conclude that Petitioner has not shown by a preponderance of evidence that claims 1–3, 6 and 7 are anticipated by Slater and, for the same reasons, that Petitioner has not shown by a preponderance of evidence that claims 4 and 5 would have been obvious over the combination of Slater and Weaver. Accordingly, I respectfully dissent-in-part.

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