

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

3D DIAGNOSTIX, INC.,
Petitioner,

v.

WATSON GUIDE IP, LLC,
Patent Owner.

PGR2024-00040
Patent 11,806,209 B2

Before SHERIDAN K. SNEDDEN, NEIL T. POWELL,
and JAMES A. TARTAL, *Administrative Patent Judges*.

TARTAL, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 328(a)

I. INTRODUCTION

3D Diagnostix, Inc. (“Petitioner”)¹ filed a Petition requesting a post-grant review of claims 1–3, 5–7, 10–14, 16, and 17 of U.S. Patent No. 11,806,209 B2 (Ex. 1001, “the ’209 patent”). Paper 1 (“Pet”). Watson Guide IP, LLC. (“Patent Owner”)² filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). Along with its Preliminary Response, Patent Owner filed a statutory disclaimer of claims 11 and 13 of the ’209 patent. Ex. 2001 (the “Disclaimer”). With the Board’s authorization, Petitioner filed a Preliminary Reply (Paper 7, “Prelim. Reply”), and Patent Owner filed a Preliminary Sur-reply (Paper 8, “Prelim. Sur-reply”). Taking into account that claims 11 and 13 were disclaimed, we determined that the ’209 patent is eligible for post-grant review and, based on the information presented, instituted trial on claims 1–3, 5–7, 10, 12, 14, 16, and 17 (the “Challenged Claims”). Paper 9, 2, 8–9, 28 (“Dec.”).³

Patent Owner subsequently filed its Response to the Petition (Paper 12, “Resp.” (sealed), Paper 13, “Resp.” (redacted)), Petitioner filed

¹ Petitioner identifies no additional real parties-in-interest and further states that “30% of the stock of 3D Diagnostix, Inc. is held by Straumann Manufacturing, Inc., which has no control, input or participation in the preparing or filing of this Petition.” Pet. 100.

² Patent Owner identifies no additional real parties-in-interest. Paper 5, 2.

³ Petitioner and Patent Owner identify *Watson Guide IP, LLC v. 3D Diagnostix, Inc.*, No. 1:24-cv-10518-LTS (D. Mass), as a related proceeding. Pet. 100, Paper 5, 2. Petitioner also indicates that the parent patent of the ’209 patent—U.S. Patent No. 11,173,016 B2—was the subject of *Absolute Dental Services, Inc., v. Watson Guide IP, LLC*, IPR2023-00177, in which the petition for *inter partes* review was denied. See Pet. 101; IPR2023-00177, Paper 8 (Decision Denying Institution of *Inter Partes* Review, May 4, 2023).

its Reply (Paper 16, “Reply”), and Patent Owner filed its Sur-reply (Paper 18, “Sur-reply”). We held a hearing on October 29, 2025, and a transcript is of record (Paper 25, “Tr.”).

We have jurisdiction under 35 U.S.C. § 6. Petitioner has the burden to prove unpatentability by a preponderance of the evidence. *See* 35 U.S.C. § 326(e); 37 C.F.R. § 42.1(d) (2023). “Preponderance of the evidence means the greater weight of evidence, evidence which is more convincing than the evidence which is offered in opposition to it.” *U.S. v. C.H. Robinson Co.*, 760 F.3d 1376, 1383 (Fed. Cir. 2014) (internal quotations omitted). This Final Written Decision is issued pursuant to 35 U.S.C. § 328(a) and 37 C.F.R. § 42.73. After considering the arguments and evidence presented by Petitioner and Patent Owner (collectively, the “Parties”), for the reasons discussed below, we find that Petitioner established by a preponderance of the evidence that claims 1–3, 5–7, 10, 12, 14, 16, and 17 of the ’209 patent are unpatentable.

II. BACKGROUND

A. The ’209 Patent

The ’209 patent, titled “Fixation Base and Guides for Dental Prosthesis Installation,” issued on November 7, 2023. Ex. 1001, codes (45), (54). The ’209 patent “relates to [a] method and apparatus for installing a prefabricated dental prosthesis in the mouth of a patient,” and, in particular, describes “a method enabling installation of a multi-tooth prosthesis anchored in implants.” *Id.* at 1:15–17, 1:31–32.

The ’209 patent describes a procedure whereby first a “fixation base” is attached to the jawbone to provide “geometrically correct reference points for subsequent operations,” and “remains in place on the dental anatomy for

most of the procedure.” *Id.* at 1:38–43. Installation of the fixation base in the appropriate location may be assisted by the temporary use of a “mouthpiece” that is “formed to more of the maxillary or mandibular structure than that contacted by the fixation base” and “removed after installation of the fixation base.” *Id.* at 1:43–49. The ’209 patent explains that the “mouthpiece complements [the] fixation base . . . by conforming to some surfaces of the mouth of the patient not covered by [the] fixation base.” *Id.* at 6:56–61.

“With only the fixation base installed, undesired teeth, previously installed dental fixtures, and obstructive body tissues are removed from the work site,” and “[e]xposed maxillary or mandibular bone is then recontoured by abrasive removal of tissue.” *Id.* at 1:50–54. An “abutment guide base” may then be installed to the fixation base “to confirm appropriate preparation of the maxillary or mandibular bone tissue,” after which, the abutment guide base may be removed. *Id.* at 1:57–61. Next, a “drill guide” is installed to the fixation base and “holes for implants are drilled into the exposed and recontoured bone.” *Id.* at 1:63–65. “Implants are installed in the drilled holes,” and the “drill guide may then be removed.” *Id.* at 1:65–67. “The abutment guide base is installed to the fixation base, and abutments are installed” on their “associated implant.” *Id.* at 2:1–4. “Copings are then installed using the abutments,” and a “prefabricated prosthesis is then installed over the copings” using a “settable resin . . . to bond the copings to the prosthesis.” *Id.* at 2:5–8. The prosthesis, with copings, is removed, the abutment guide base and fixation base are removed, and then the prosthesis is installed for use. *Id.* at 2:8–13.

Figure 1 of the '209 patent is reproduced below.

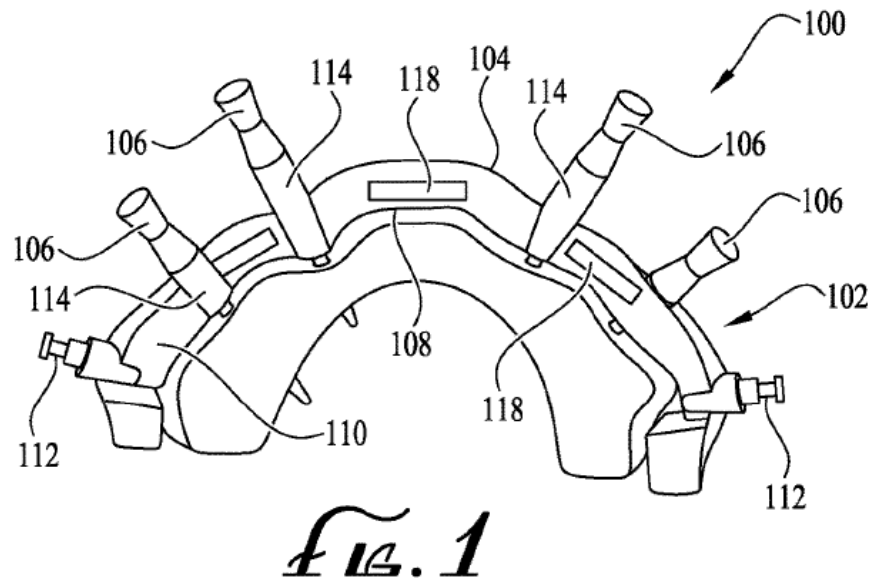


Figure 1 illustrates “an environmental plan view of a fixation base used to install a dental prosthesis.” *Id.* at 2:39–40. Figure 1 shows fixation base 100, which “provid[es] an attachment surface for other apparatus used to orient” implants, abutments, copings, and a dental prosthesis “during an installation procedure.” *Id.* at 4:1–4. Referring to features of the fixation base in Figure 1, the '209 patent states as follows:

Fixation base 100 may further comprise a generally arcuate base member 102 having a front surface 104 bearing a plurality of fasteners 112, a rear surface 108 configured and dimensioned to fit flushly against a maxillary or mandibular bone structure of the patient, and a horizontal surface 110 bearing first attachment elements 106 for engagement of a first dental guide 122 . . . usable with fixation base 100, and wherein fixation base 100 is non-anatomical.

Id. at 4:4–4:12.

Figure 2 of the '209 patent is reproduced below.

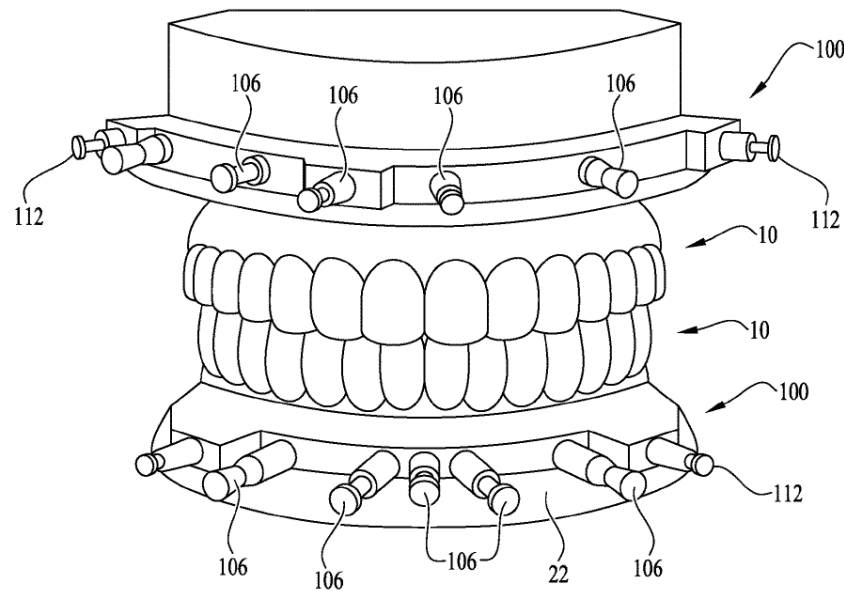


FIG. 2

Figure 2 illustrates “a front view of maxillary and mandibular prostheses, shown with apparatus of the invention attached thereto, and fixed to models of maxillary and mandibular jawbones.” *Id.* at 2:42–45. Figure 2 includes dental prosthesis 10 and fixation base 100 attached by fasteners 112 to artificial model 22 of mandibular and maxillary jawbones. *Id.* at 3:63–4:15, 4:29–33. “First attachment elements 106 may comprise pins, threaded bolts, or other manually removable fasteners, and are made to cooperate with corresponding openings in the other apparatus to be mounted on fixation base 100.” *Id.* at 4:33–37.

Figure 4 of the '209 patent is reproduced below.

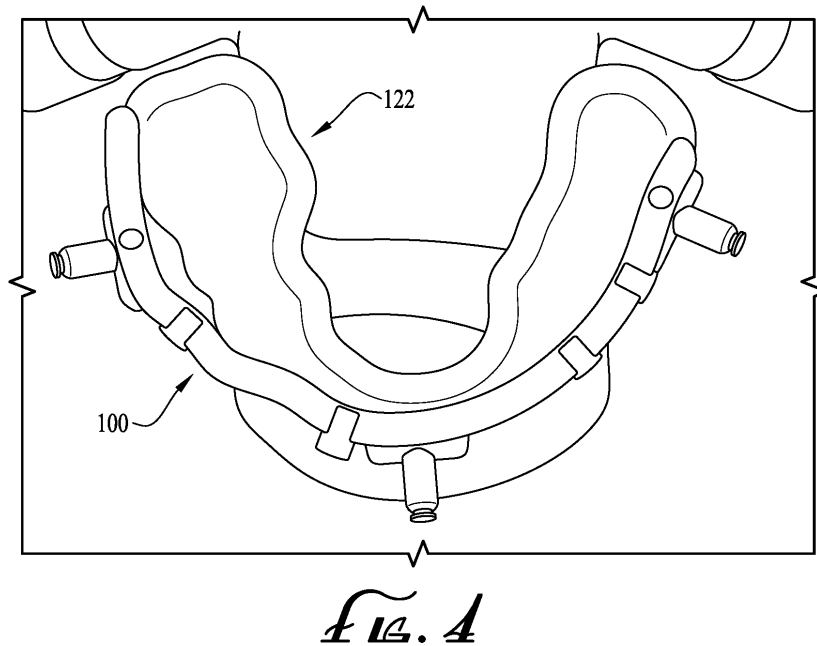


Figure 4 illustrates a plan view of the fixation base of Figure 1 shown attached to a mouthpiece. “[F]irst dental guide 122 is a mouthpiece configured and dimensioned to surround teeth (not shown) of the patient, and to releasably attach to fixation base 100. *Id.* at 4:63–67.

B. Illustrative Claim

The patentability of claims 1–3, 5–7, 10, 12, 14, 16, and 17 of the '209 patent is at issue in this proceeding. Pet. 1; Disclaimer 1. Claims 1 and 17 are independent claims directed to a “method of installing a multi-tooth dental prosthesis” and “a method of installing a fixation base,” respectively. Claim 7 is also independent and is directed to an “apparatus for installing a dental prosthesis.” Claims 2, 3, 5, and 6 depend from claim 1, and claims 10, 12, 14, and 16 depend from claim 7.

Claim 1 is illustrative of the claimed subject matter and is reproduced below.

1. A method of installing a multi-tooth dental prosthesis in a maxillary or mandibular position in a mouth of a patient, the method comprising:
 - providing a dental prosthesis for the maxillary or mandibular positioning in the patient's mouth,
 - utilizing a fixation base to serve as a mounting jig for a plurality of other dental guides comprising a first dental guide and a second dental guide, wherein the fixation base comprises a generally arcuate shape with a front surface that has a plurality of openings through which fasteners can be passed, a rear surface, and a horizontal surface;
 - utilizing the first dental guide, wherein the first dental guide is a mouthpiece that attaches to the fixation base and configured and dimensioned to surround at least a portion of the teeth of the patient and is used to assure appropriate location to attach the fixation base to the maxillary or mandibular bone tissue of said patient;
 - installing the fixation base to the maxillary or mandibular bone tissue of said patient;
 - removing the mouthpiece from the installed fixation base;
 - removing at least one of natural teeth, dental fixtures, and obstructive mouth tissues from the work site, to expose an underside of the maxillary or mandibular bone tissue;
 - recontouring the bone tissue;
 - utilizing the second dental guide, wherein the second dental guide is a drill guide that attaches to the installed fixation base to assure appropriate location and orientation of holes to be drilled for the subsequently installed implants;
 - drilling the implant holes in the bone tissue using the drill guide attached to the fixation base;
 - installing implants in the implant holes;
 - installing the abutments to the implants; and,
 - installing said dental prosthesis to the abutments.

Ex. 1001, 9:9–9:45.

C. Asserted Grounds of Unpatentability

Petitioner asserts that the Challenged Claims are unpatentable based on the following grounds:

Claims Challenged	35 U.S.C. §⁴	Reference(s)/Basis
1–3, 7, 10, 14, 16, 17	103	Llop '126 ⁵ , Sichuan ⁶
1–3, 7, 10, 14, 16, 17	103	Llop '126, Sichuan, Groscurth ⁷
5, 6, 12	103	Llop '126, Sichuan, Scherer ⁸
5, 6, 12	103	Llop '126, Sichuan, Scherer, Groscurth
1–3, 7, 10, 14, 16, 17	103	Llop '126, Yau ⁹
1–3, 7, 10, 14, 16, 17	103	Llop '126, Yau, Groscurth

Pet. 3.¹⁰

⁴ The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. We apply the AIA version of § 103 here, because the '209 patent does not reflect a priority date earlier than the effective date of the AIA. *See* Ex. 1001, codes (22), (60), (63).

⁵ U.S. Patent App. Pub. No. US 2017/0252126 A1, published Sep. 7, 2017 (Ex. 1006, “Llop '126”).

⁶ Chinese Patent App. Pub. No. CN 105686886 A (certified translation), published June 22, 2016 (Ex. 1009, “Sichuan”).

⁷ U.S. Patent No. US 9,504,533 B2, issued Nov. 29, 2016 (Ex. 1011, “Groscurth”).

⁸ “Clinical Demonstration: All-on-4 nSequence Guided Prosthetics Surgical Technique with Zest Anchors Chairside Attachment Processing Material,” available at <https://www.youtube.com/watch?v=VOWRdFpfngI> (Exs. 1012 (part 1) and 1013 (part 2), “Scherer”).

⁹ U.S. Patent App. Pub. No. US 2017/0265963 A1, published Sep. 21, 2017 (Ex. 1010, “Yau”).

¹⁰ Petitioner also alleged unpatentability under 35 U.S.C. § 112 (a) and (b) for claims 11 and 13 of the '209 patent. Pet. 3. Because Patent Owner disclaimed claims 11 and 13 after the Petition was filed, Petitioner’s allegations directed to claims 11 and 13 are not at issue. *See* 37 C.F.R. § 42.207(e); Disclaimer 1.

Petitioner relies on the Declaration (Ex. 1003, dated July 18, 2024) and the Supplemental Declaration (Ex. 1050, dated July 16, 2025) of Douglas Erickson, D.D.S., M.S., as support for its challenges.¹¹ *See also* Ex. 2010 (Transcript of the Deposition of Douglas Erickson, D.D.S., M.S. FACP, dated August 12, 2025). Patent Owner relies on the Declaration of Alan Banks (Ex. 2006, dated April 21, 2025) and the Declaration of Jeffrey A. Elo, DDC, MS, FACS (Ex. 2007, dated April 21, 2025) as support for its arguments in opposition. *See also* Ex. 1046 (Transcript of the Deposition of Alan Banks, dated June 23, 2025) and Ex. 1047 (Transcript of the Deposition of Dr. Jeffrey A. Elo, dated June 26, 2025).

III. ANALYSIS

A. Legal Standards for Obviousness

A patent claim is unpatentable for obviousness 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). In *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1 (1966), the Supreme Court set out a framework for assessing obviousness that requires consideration of four factors: (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) “secondary considerations” of

¹¹ Petitioner also provides the Declaration of Kathryn Talbot (Ex. 1015, dated July 11, 2024) as support for the authenticity and public accessibility of Scherer. Patent Owner does not dispute the availability of Scherer as prior art in this case. *See generally* Resp.

nonobviousness such as “commercial success, long felt but unsolved needs, failure of others, etc.” *Id.* at 17–18; *KSR*, 550 U.S. at 407.

“Whether an ordinarily skilled artisan would have been motivated to modify the teachings of a reference is a question of fact.” *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1327 (Fed. Cir. 2016). “[W]here a party argues a skilled artisan would have been motivated to combine references, it must show the artisan ‘would have had a reasonable expectation of success from doing so.’” *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1360–61 (Fed. Cir. 2017) (quoting *In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d 1063, 1068–69 (Fed. Cir. 2012)).

B. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art as of the earliest priority date of the '209 patent “would at least have had a doctoral degree in dentistry and at least three to four years of experience working with guided dental surgery for installing dental implants and prostheses.” Pet. 13 (citing Ex. 1003 ¶ 49). Patent Owner agrees with Petitioner’s proposed definition of a person of ordinary skill in the art. Resp. 4. Based on our review of the record before us, we adopt Petitioner’s uncontested definition of a person of ordinary skill in the art, because it is supported by the evidence of record and consistent with the disclosure in the '209 patent and in the asserted prior art.

C. Claim Construction

In post-grant reviews, the Board interprets claim language using the district-court-type standard, as described in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). See 37 C.F.R. § 42.200(b). Under

that standard, we generally give claim terms their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art at the time of the invention, in light of the language of the claims, the specification, and the prosecution history. *See Phillips*, 415 F.3d at 1313–14. Although extrinsic evidence, when available, may also be useful when construing claim terms under this standard, extrinsic evidence should be considered in the context of the intrinsic evidence. *See id.* at 1317–19.

1. “drill guide” and “fixation base”

Petitioner contends that the claim terms “drill guide” and “fixation base” require construction “to resolve certain of the unpatentability grounds presented.” Pet. 13–14. In particular, Petitioner proposes that “drill guide” means “drill guide made from metal or metallic alloy without traditional plastic or acrylic,” and that “fixation base” means “fixation base made from metal, metallic alloy or other strong material without traditional plastic or acrylic.” *Id.* According to Petitioner, the Specification “teaches that the composition of the drill guide is ‘a metal or metallic alloy,’” and provides no other alternatives. *Id.* at 14 (citing Ex. 1001, 5:35–36). Petitioner similarly alleges that “fixation base” is described as “being fabricated from a metal, metal alloy, or other strong material,” and that “traditional plastic or acrylic” is excluded in light of disclosures in a provisional application. *Id.* at 21–24. According to Petitioner, its proposed constructions should be adopted “based on disclaimer of claim scope in the provisional application incorporated into the [’209] patent specification.” *Id.* at 14–24.

Patent Owner contends that we need not address the constructions proposed by Petitioner because the issues addressed by Petitioner’s proposed

constructions only concern allegations of unpatentability directed to claims 11 and 13, which Patent Owner disclaimed. Resp. 4–5; Disclaimer 1.

In Reply, Petitioner argues that its proposed constructions are relevant to Patent Owner’s evidence of objective indicia of non-obviousness, including the alleged nexus. Reply 18–19 n.3. In light of our analysis below, because no determination in this Decision turns on whether we adopt Petitioner’s proposed constructions of “drill guide” and “fixation base,” we find that no express construction of these terms is required. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those 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)).

2. “a mouthpiece” that is “configured and dimensioned to surround at least a portion of the teeth of the patient”

Independent claims 1 and 17 each recite a method that includes utilizing “a mouthpiece” that is “configured and dimensioned to surround at least a portion of the teeth of the patient.” Independent claim 7 recites an apparatus that similarly includes “a mouthpiece configured and dimensioned to surround at least a portion of the teeth of the patient.”

Patent Owner argues that “one of skill in the art would understand the phrase ‘mouthpiece . . . configured and dimensioned to surround at least a portion of the teeth of the patient’ as referring to a ‘device that is inserted into the mouth and worn over the teeth . . . configured and dimensioned to enclose at least some teeth of the patient.’” Resp. 9 (citing Ex. 2007 ¶ 44) (alterations in original). As support, Patent Owner first directs our attention to a statement by the applicant during prosecution of the ’209 patent that

“the patient’s existing teeth provide a ‘hand and glove’ relationship with the mouthpiece.” *Id.* at 6 (citing Ex. 1002, 166–67).

Additionally, according to Patent Owner, the “term ‘mouthpiece’ as used in the dentistry field refers to a structure similar to a mouthpiece used to protect athletes such as boxers and that is configured to surround the teeth of a patient,” which Patent Owner alleges is “consistent with the description and drawings of a ‘mouthpiece’ in the ’209 patent.”¹² *Id.* (citing Ex. 2007 ¶¶ 39, 40). Patent Owner further asserts that a dictionary definition of “mouthpiece” is “a rubber or flexible plastic protective device worn over the teeth, as by boxers.” *Id.* at 6–7 (citing Ex. 2009). Dr. Elo suggests that WebMD defines “mouth guard” as “a device that is inserted in to the mouth and worn over the teeth to protect them against impact or injury,” and that a person of ordinary skill in the art would equate a “mouthpiece,” as claimed, to a “mouth guard.” Ex. 2007 ¶ 39.

Patent Owner does not explain why a dictionary definition of “mouthpiece” related to sports equipment worn, for example, by a boxer as a “protective device” is relevant to the meaning of “mouthpiece” as used in the ’209 patent where “mouthpiece,” instead, refers to a “first dental guide” or “tool” to engage a “fixation base” and assist in locating the fixation base “with sufficient precision to assure successful installation of dental prosthesis.” *See* Ex. 1001, 1:43–48, 4:63–5:10. In regard to Dr. Elo’s

¹² Dr. Erickson states that “the term ‘mouthpiece’ does not have any particular meaning within dentistry,” and supports his opinion with evidence that an online catalog of dental and medical equipment provides a variety of items for sale described as a “mouthpiece” that do not “appear to be worn over the teeth of a patient,” contrary to Patent Owner’s proposed construction. Ex. 1050 ¶ 10 (citing Ex. 1038; Ex. 1047, 35:2–13).

testimony, “mouth guard” and “mouthpiece” are different terms, and, unlike a “mouth guard,” the “mouthpiece” recited in the ’209 patent is not “worn over the teeth to protect them against impact or injury.” Thus, we do not discern the ’209 patent to disclose a “mouthpiece” having the function of a “mouth guard,” however, we acknowledge that the ’209 patent discloses a mouthpiece having a U-shaped design that may resemble the shape of a “mouth guard” used by athletes. *See, e.g.,* Ex. 1001, Figs. 4 and 12C.

Importantly, Patent Owner does not address the written disclosure in the Specification of the ’209 patent, which states that a mouthpiece conforms “to some surfaces of the mouth of the patient not covered by [the] fixation base.” *Id.* at 6:56–61. Patent Owner directs us to no disclosure in the Specification that would suggest that a “mouthpiece” is limited to a device “worn over the teeth,” as Patent Owner asserts, as opposed to “some surfaces of the mouth,” as expressly described in the Specification. Regardless, we find (for the reasons discussed below) that Petitioner shows that Sichuan teaches a biteplate that is a “device that is inserted into the mouth and worn over the teeth,” thereby satisfying Patent Owner’s proposed definition of “mouthpiece.” Accordingly, we find that no express construction of “mouthpiece” is required. Moreover, the Challenged Claims do not simply recite a “mouthpiece,” but further require a mouthpiece “configured and dimensioned to surround at least a portion of the teeth of the patient,” which we address next.

With regard to the claim language “configured and dimensioned to surround at least a portion of the teeth of the patient,” first, Patent Owner proposes construing “surround” to mean “encompass.” Resp. 9 (citing Ex. 2007 ¶ 44). According to Patent Owner, “[t]his construction is consistent

with the specification and claims as well as the commonly understood definition of the word ‘surround.’” *Id.* at 7 (citing Ex. 1001, 4:61–67). Patent Owner, however, does not explain how its proposed construction is “consistent” with the Specification, but instead directs us to a portion of the Specification that states that the mouthpiece is “configured and dimensioned to surround teeth” of the patient. *Id.*; Ex. 1001, 4:61–67. Patent Owner directs us to no disclosure in the Specification that uses “encompass” to describe a “mouthpiece.”

Patent Owner also provides several dictionary definitions of “surround,” including “to encompass or enclose on all sides; to envelop or encircle;” “to enclose, encompass, or beset on all sides; to stand, lie, or be situated around;” “to enclose on all sides;” “to enclose on all sides; encompass” and “something that surrounds, as the area, border, etc.” Resp. 7–8 (quoting Exs. 2002–2005). Dr. Elo, who provides testimony in support of Patent Owner, was asked what the difference was between “surrounding something and enclosing something,” and stated “they’re synonyms.” Ex. 1047, 39:19–21. He further explained, in regard to considering dictionary definitions, that “[i]f you put in ‘surround’ and come back with ‘enclose,’ you put in ‘enclose,’ you come back with ‘surround.’” *Id.* at 39:22–40:7.

Turning to the Specification of the ’209 patent, it does not provide an explicit definition of “surround” and does not suggest an intention to use a meaning of the term “surround” that is particular to the ’209 patent. Patent Owner directs our attention to Figures 12C and 12D of the ’209 patent (Resp. 8–9), which we reproduce below:

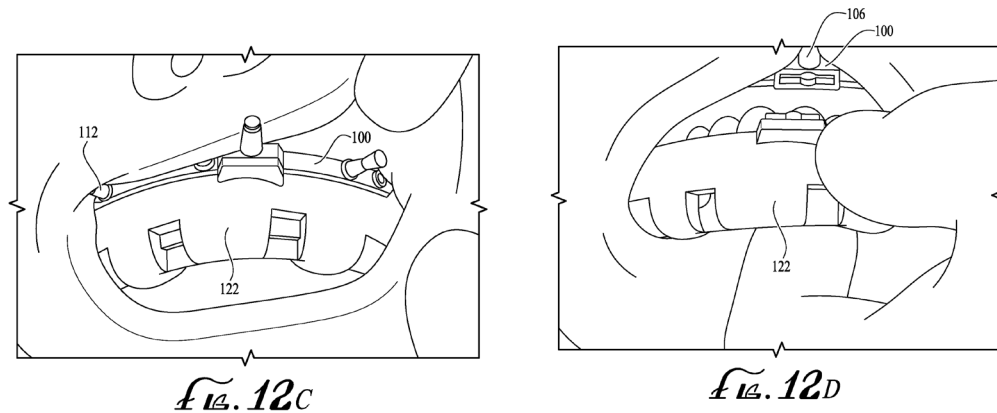


Figure 12C shows fixation base 100 with mouthpiece guide 122 “properly fitted on a patient’s teeth and with holes drilled and hammered in insertion pins,” and Figure 12D shows fixation base 100 “once secured having the mouthpiece guide removed by unlocking the pins and removing the mouthpiece guide.” Ex. 1001, 3:6–11, 8:12–18. According to Patent Owner, “[a]s seen in Figs. 12C and 12D, the first dental (mouthpiece) guide 122 encloses the patient’s teeth to properly seat the fixation base 100.” Resp. 8. Patent Owner further explained that Figures 12C and 12 D “show that the mouthpiece goes completely over the teeth,” and that it also illustrates “some windows in the mouthpiece so that you can see if the teeth are fully inserted into – certain teeth at least are fully inserted into the mouthpiece.” Tr. 30:20–31:10.

In its Sur-reply, Patent Owner states that there is no “issue” with “the substitution of the word ‘enclose’ for the term ‘surround.’” Sur-reply 6. We noted in the Institution Decision that “construing the claim term ‘surround’ to mean ‘enclose’ does not further inform or clarify to a person of ordinary skill in the art what is encompassed by the claim limitation.” Dec. 15. We reach the same conclusion here on the full record and find no basis to rewrite the Challenged Claims to replace “surround” with “enclose.” To the extent

Patent Owner can be understood to suggest that we import additional limitations into the claims based on the exemplary figures in the '209 patent, we decline to do so. Regardless, given the recognition by the Parties that “surround” and “enclose” are synonymous, our determinations in this Decision would have been the same had we adopted Patent Owner’s proposed definition of “surround” to mean “enclose.”

Further, with regard to the claim language “configured and dimensioned to surround at least a portion of the teeth of the patient,” Patent Owner proposes construing “a portion of the teeth” as “at least some teeth.” Resp. 9 (citing Ex. 2007 ¶ 44). Patent Owner, however, offers no sufficient explanation in its Response to explain how why a “portion of the teeth” means “at least some teeth.” The Specification does not provide an explicit definition of “a portion of the teeth” and does not suggest an intention to use a meaning of the term “a portion of the teeth” that is particular to the '209 patent. To the extent Patent Owner can be understood to imply that we should import additional limitations into the Challenged Claims based on the exemplary figures in the '209 patent, we decline to do so. For that reason, alone, we decline to adopt Patent Owner’s proposed construction.

Additionally, Patent Owner asserts for the first time in its Sur-reply that “[t]he issue is not the substitution of the word ‘enclose’ for the term ‘surround’, but that at least some teeth are enclosed/surrounded, rather than at least some part of the teeth.” Sur-reply 2. Patent Owner did not make this argument in its Response, which does not assert that “portion of the teeth” should be construed to exclude “at least some part of the teeth.” *See generally* Resp. In our Scheduling Order entered with the Institution Decision, Patent Owner was expressly “cautioned that any arguments not

raised in the response may be deemed waived.” Paper 10, 9. That is the second reason we decline to adopt Patent Owner’s proposed construction.

Nevertheless, we consider Patent Owner’s argument that its proposed construction was “supported by the file history” and was “explained in Patent Owner’s Preliminary Response.” Sur-reply 6 (without citation to the Preliminary Response). Each of the citations to the file history of the ’209 patent in the Preliminary Response does not support Patent Owner’s argument. *See* Prelim. Resp. 13 (stating that “[a]s explained in the prosecution history . . . the patient’s existing teeth provide a ‘hand and glove’ relationship with the mouthpiece” (citing Ex. 1002, 166–67)), 17 (stating that “[t]he Examiner determined that [Llop ’126] does not teach or render obvious a mouthpiece” as claimed (citing Ex. 1002, 224)), 24 (citing Ex. 1002, 166–67). Thus, Patent Owner fails to show how the prosecution history supports interpreting “a portion of the teeth” to mean “at least some teeth.”

Further considering the prosecution history, to overcome rejections based on Llop ’126, Patent Owner stated in regard to the then pending application that “it is the patient’s existing teeth that provide the surfaces for the mouthpiece to mate with,” and that “[i]n contrast, Llop ’126 removes the teeth of the patient *prior* to positioning its ‘fixation base,’” and that “[a]s a result, Llop ’126 does *not* utilize a mouthpiece ‘configured and dimensioned to surround teeth of the patient’ because there are no teeth to utilize.” Ex. 1002, 166–67. Subsequently, the Examiner allowed the claims, stating that the art of record did not teach a “dental guide configured and dimensioned to surround at least a portion of the teeth of the patient and to attach to the fixation base and to be removed after the fixation base is

affixed to the maxillary or mandibular bone structure of a patient.” *Id.* at 224–25. The Examiner did not otherwise explain what feature was missing from Llop ’126. Thus, contrary to Patent Owner’s argument, the implication, if any, from the prosecution history is that the Examiner found the rejection based on Llop ’126 was overcome because Llop ’126 does not utilize any teeth of the patient.

Patent Owner does not suggest, much less establish, that matching “one or more portions” of detention, as taught in Llop ’126, is the same as the claim language “surrounding,” or that the Examiner made such a finding. Indeed, we discern nothing in the Examiner’s determination to suggest that Llop ’126 “surrounds” “at least some part of the teeth,” but not “at least some teeth,” and even if the Examiner made such a finding, that would not be a sufficient reason to construe “a portion of the teeth” to mean “at least some teeth.” In sum, Patent Owner directs us to nothing from the Examiner’s assessment of Llop ’126 that supports the notion that “a portion of the teeth” should be construed to mean “at least some teeth” and excludes “at least some part of the teeth.”

We find no sufficient reason to rewrite the Challenged Claims to replace “a portion of the teeth” with “at least some teeth,” and we are not persuaded to interpret the phrase “configured and dimensioned to surround at least a portion of the teeth of the patient” to mean something other than its plain and ordinary meaning. Furthermore, Petitioner argues that even if we adopt Patent Owner’s proposed construction, “the prior art nevertheless discloses those elements.” Tr. 6:12–14. In our analysis below we find that our determinations in this Decision would have been the same had we adopted Patent Owner’s proposed definition of “a portion of the teeth” to

mean “at least some teeth.” In particular, we find (for the reasons discussed below) that Petitioner shows that Sichuan teaches a biteplate that is “configured and dimensioned to surround at least some teeth of the patient,” thereby satisfying Patent Owner’s proposed definition.

D. Summary of Asserted Prior Art References

1. Summary of Llop ’126

Llop ’126, titled “Bone Foundation Guide System and Method,” describes a “dental implant surgical guide that removably combines with a bone foundation guide to properly place a dental implant-retained prosthesis to a dental surgical site.” Ex. 1006, code (54), ¶ 26. Figure 1 is “a perspective bottom side view of one possible embodiment of the bone foundation guide” (*id.* ¶ 47), and is reproduced below.

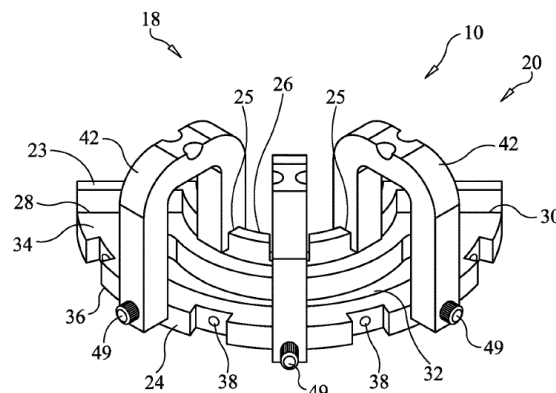


FIG. 1

As shown in Figure 1, bone foundation guide system 18 includes a bone foundation guide 20 comprising buccal wall 24 and lingual wall 26 connected together at ends 28 and 30. *Id.* ¶¶ 95–96. Attachment apertures 38 may pass through buccal wall 24 to allow fasteners 40 (not shown in Figure 1) to removably secure guide 20 to a dental surgical site. *Id.* ¶ 97. The system 18 may also include anchoring struts 42 that are removably attached to buccal wall 24 and lingual wall 26, where struts 42

have indentations 46 (not shown in Figure 1) “that can match one or more portions of gum, dentition or both” of the opposing alveolar ridge. *Id.* ¶ 98; *see also id.* ¶ 136. Struts 42 may include apertures “that allow strut fasteners 49 (e.g., tapered pins) to penetrate through the anchoring strut 42 to the buccal wall 24,” where fasteners 49 are “held in place by frictional force.” *Id.* ¶ 98.

The patient’s action (e.g., substantially clamping down with patient’s mouth upon the bone foundation guide 20 in situ could allow the patient to temporarily and removably hold the bone foundation dental [guide] upon the dental surgical site while the dental health care professional (not shown) is free to use both hands to attach the bone foundation guide 20 in place with body fasteners.

Id. ¶ 99. Figure 12 is “a front perspective view of the bone foundation guide with struts” (*Id.* ¶ 58), and is reproduced below.

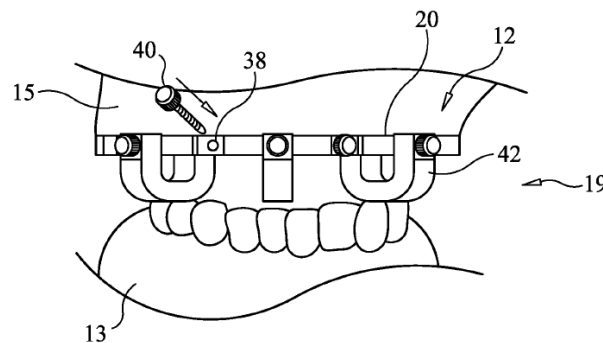


FIG. 12

After attaching guide 20, anchoring struts 42 may be removed so that a dental implant surgical guide may be removably attached “to guide and locate the placement of dental implants within dental surgical site 12.”

Id. ¶ 101.

Figures 27, 28, and 29, reproduced below, depict an embodiment that includes “a bone foundation guide prosthesis 200 that can be removably

combined with the body 22 of the bone foundation guide to form a bone foundation guide prosthesis-body combination 202.” *Id.* ¶ 128.

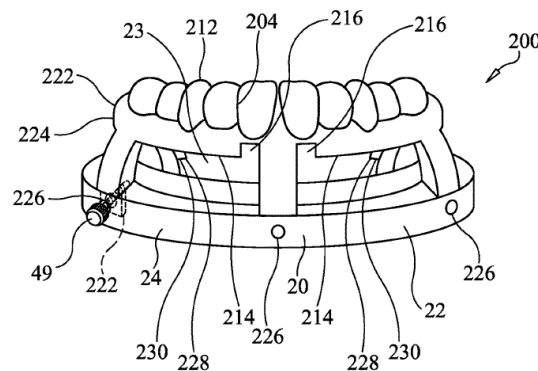
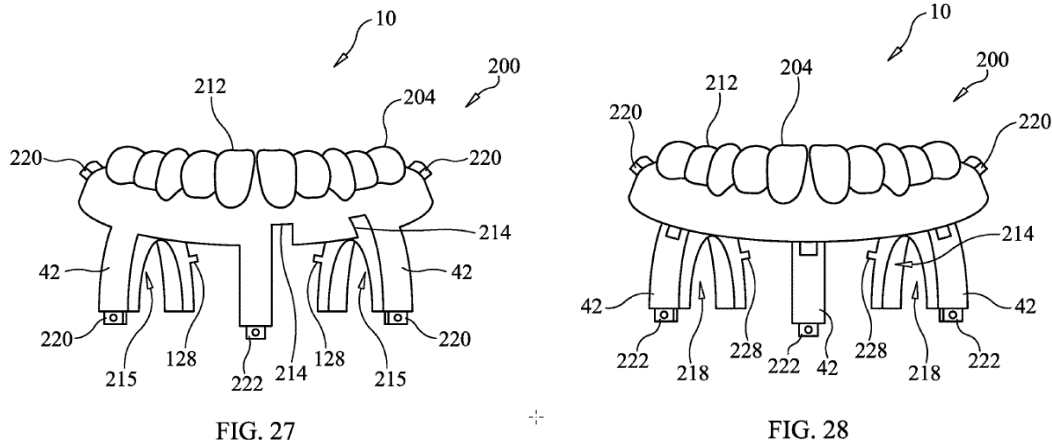


FIG. 29

Figure 27 illustrates “a perspective view of the bone foundation guide prosthesis, the prosthesis being unitary with the anchoring struts, Figure 28 illustrates “a perspective view of the bone foundation guide prosthesis being non-unitary with the anchoring struts,” and Figure 29 illustrates “perspective cutaway view of the bone foundation guide prosthesis being combined with the bone foundation guide.” *Id.* ¶¶ 74–76. As shown in Figure 27, the teeth portion 204 of the bone foundation guide prosthesis 200 may be unitary or one-piece with the struts, thereby “providing strength and rigidity to the combination 202.” *Id.* ¶ 133. In Figure 28 “one or more anchoring struts 42

are removably attached to the bottom 214 of the bone foundation guide prosthesis 200.” *Id.* As shown in Figure 29, “[a]s the respective patient bites upon the combination, the opposing or first alveolar ridge 13 (e.g., opposing teeth)[not shown in Figure 29] could be brought into contact with the teeth portion 204 of the bone foundation guide prosthesis 200.” *Id.*

¶ 128. Various parameters of this “opposing alveolar ridge-to-bone foundation guide prosthesis bite” may reflect “the final prosthesis-to-opposing first alveolar ridge bite.” *Id.* In the case of “any significant departure or inconstancy with the surgical dental implant plan” revealed by these parameters, “the dental implant surgery could be halted” and reformulated. *Id.*

2. Summary of Sichuan

Sichuan is titled “Subapical Osteotomy Positioning Guide Plate and Manufacturing Method Thereof” and states that the “subapical osteotomy positioning guide plate belongs to the field of auxiliary medical devices.” Ex. 1009, codes (54), (57). According to Sichuan, “[s]ubapical osteotomy is used as a classic technique for orthognathic surgery to treat various types of jaw deformities,” including “bimaxillary protrusions,” which “often manifest in raised faces (commonly known as ‘buckteeth’).” *Id.* ¶ 2. Sichuan describes a positioning guide plate that “fills the gap of lacking a device for guiding osteotomy positioning during subapical osteotomy,” so as “to prevent the occurrences of the most common complications associated with current subapical osteotomy.” *Id.* at code (57).

Figure 1 of Sichuan, reproduced below, illustrates a structural schematic embodiment including a positioning biteplate.

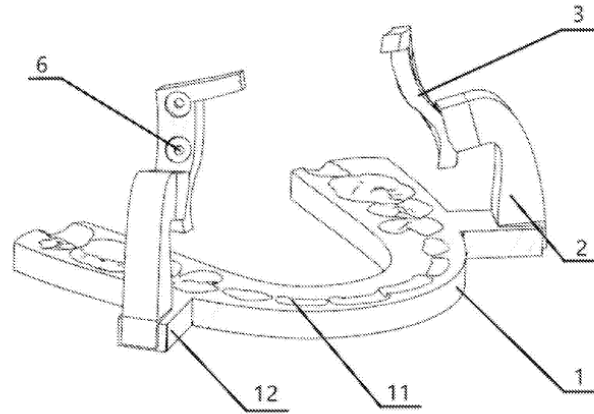


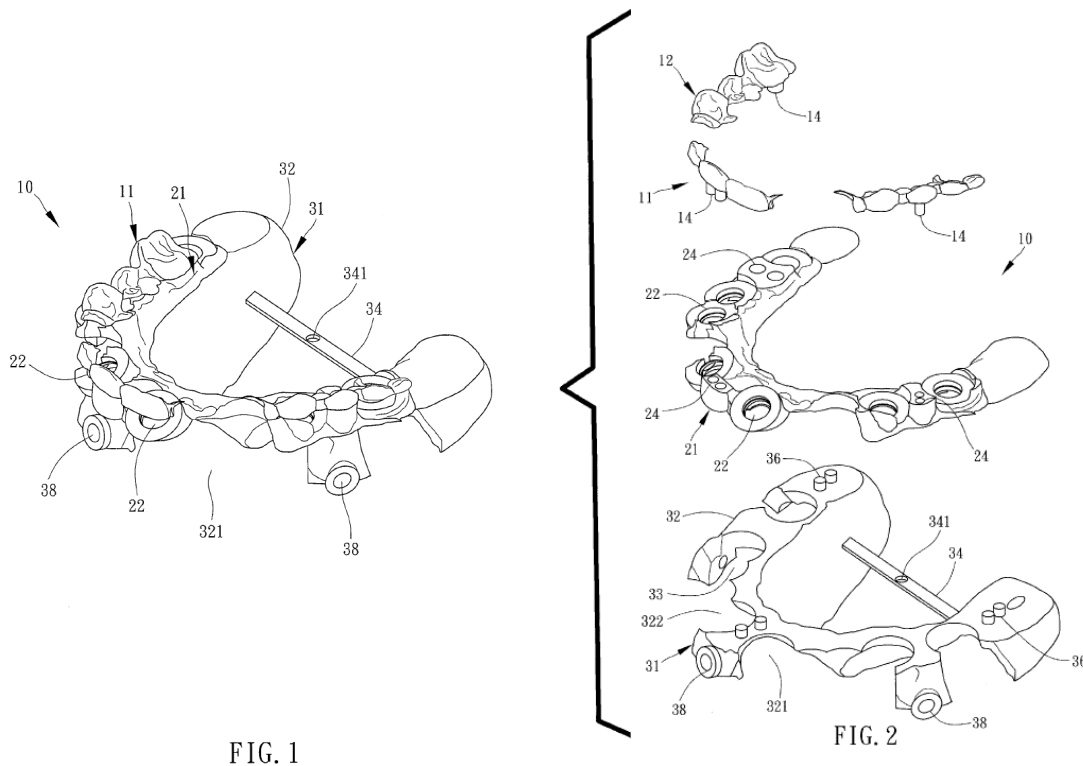
Figure 1

As shown in Figure 1, “positioning biteplate 1 is provided with initial tooth prints 11 disposed on its upper surface.” *Id.* ¶ 66. Connector rods 2 connect positioning biteplate 1 to maxillary osteotomy line guide plates 3. *Id.* Guide plates 3 include screw holes 6. *Id.* During surgery, after removing soft tissue, a surgeon places “the positioning biteplate on the patient’s upper dentition, so that the maxillary osteotomy line guide plate completely fits the surface of the maxillary anterior bone,” and, after pre-drilling, fixes “the maxillary osteotomy line guide plate to the surface” with screws. *Id.* ¶¶ 11–12. As shown in a second embodiment, Sichuan provides both maxillary osteotomy line guide plates and a mandibular osteotomy line guide plate, Sichuan states that “positioning biteplate 1 is provided with initial dental prints 11 disposed on the upper and lower surfaces thereof.” *Id.* ¶ 88; *see also id.* at Fig. 7.

3. Summary of Yau

Yau, titled “Dental Implant Surgical Guide,” describes a dental implant surgical guide that can be used for “patients with too many missing

teeth or full-mouth toothless.” Ex. 1010, code (54), ¶ 6. Figures 1 and 2 of Yau, reproduced below, illustrate respectively “an oblique top elevational assembly view of a dental implant surgical guide” and “an exploded view of the dental implant surgical guide.” *Id.* ¶¶ 12–13.



As shown in Figure 1, dental implant surgical guide 10 includes upper guide member 11, intermediate guide member 21, and lower guide member 31. *Id.* ¶ 16. As shown in Figure 2, “upper guide member 11 comprises a tooth mold 12,” which “is adapted for tight engagement with the natural teeth or temporary dentures of the opposite jaw when the patient bites.” *Id.* ¶ 17. In practice, after the guide members of guide 10 are assembled, guide 10 is mated with a patient’s gingiva so that “an initial positioning effect is achieved.” *Id.* ¶ 22. Afterward, the patient’s biting enables “tooth mold 12 of the upper guide member 11 to be forced into tight engagement with the

natural teeth or temporary dentures of the patient's opposite jaw," so as to "achieve fine position adjustment." *Id.* Next, mounting members 381 (not shown in the figures), for example, "plug pins or screw bolts," can be installed in mounting portions 38 to secure lower guide member 31 to the patient's gingiva "by means of friction resistance between the mounting members 381 and the patient'[s] jawbone." *Id.* ¶¶ 19, 22. "[F]ollow-up drilling or implant installation procedure can then be performed." *Id.* ¶ 23.

4. Summary of Groscurth

Groscurth, titled "Endentulous Surgical Guide," describes "[a] dental surgical drill guide assembly and method [that] includes a surgical guide housing and a base frame that fits to both gum tissue and one or multiple small areas of jawbone." Ex. 1011, codes (54), (57). In particular, in Groscurth base frame 200 may be fitted on a jawbone structure and "may be made of a transparent or semi-transparent resin" for visibility, or "may also be made of a colored resin and other composite material or metal that provides the base frame 200 with enough rigidity for stability and the right amount of flexibility in clasping areas." *Id.* at 4:46–52.

5. Summary of Scherer

Scherer is a video with the title "Clinical Demonstration: All-on-4 nSequence Guided Prosthetics Surgical Technique with Zest Anchors Chairside Attachment Processing Material." Ex. 1012. The video details a dental implant installation procedure that includes the use of a bone foundation guide as well as other guides. *See* Exs. 1012, 1013.

E. Asserted Obviousness Based on Llop '126 and Sichuan

Petitioner contends that the combination of Llop '126 and Sichuan renders the subject matter of claims 1–3, 7, 10, 14, 16, and 17 obvious.

Pet. 44–74. Petitioner’s contentions are supported by Dr. Erickson.
Ex. 1003 ¶¶ 120–198.

Patent Owner raises two arguments in opposition: 1) “neither Llop [’126] nor Sichuan, considered alone or in combination teach or suggest a mouthpiece “configured and dimensioned to surround at least a portion of the teeth of the patient,” and 2) “one [of] skill in the art would have [had] no motivation to combine Llop [’126] with Sichuan.” Resp. 28–38. Patent Owner’s arguments are directed to each of independent claims 1, 7, and 17. *Id.* Patent Owner does not raise any additional arguments directed to dependent claims 2, 3, 10, 14, or 16. *Id.* at 38. We focus our discussion below on the limitations and issues in dispute, as well as Patent Owner’s evidence of secondary indicia of non-obviousness. Based on all of the record arguments and evidence, we find for the following reasons that Petitioner has shown by a preponderance of the evidence that the subject matter of claims 1–3, 7, 10, 14, 16, and 17 would have been obvious over the asserted combination of Llop ’126 and Sichuan.

1. *Whether Llop ’126 in combination with Sichuan teaches a “mouthpiece” that is “configured and dimensioned to surround at least a portion of the teeth of the patient,” as required by each of independent claims 1, 7, and 17.*

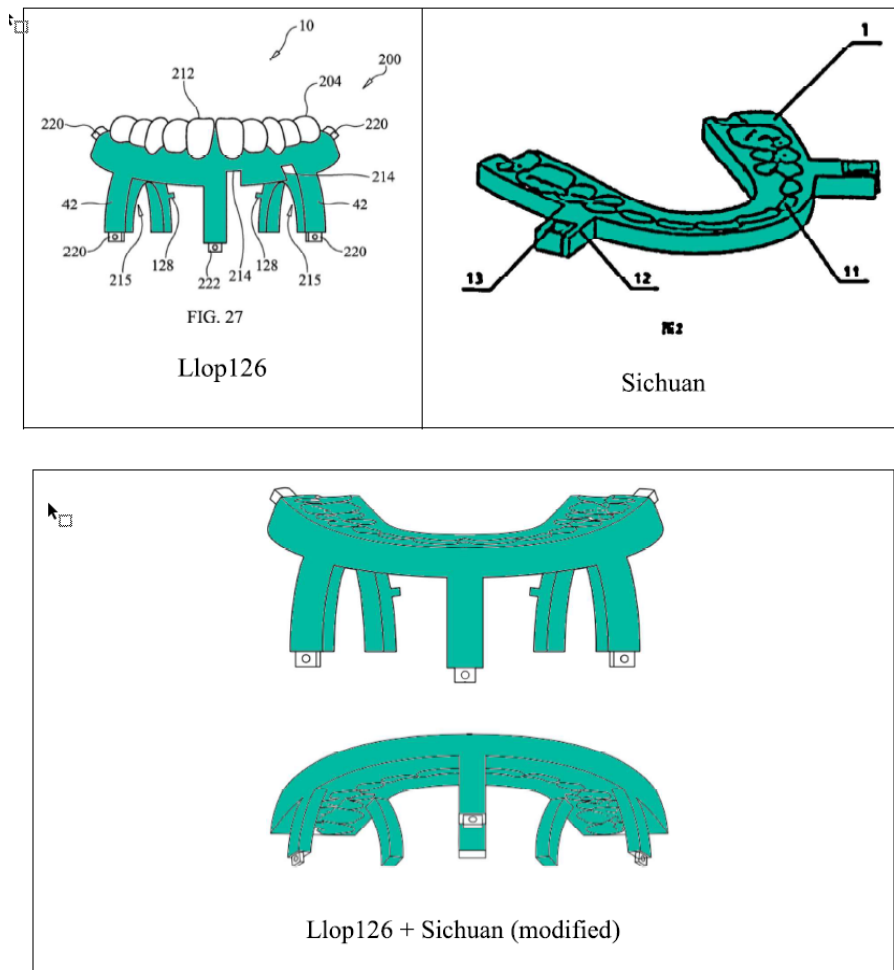
As noted above, independent claims 1 and 17 each recite a method that includes utilizing “a mouthpiece” that is “configured and dimensioned to surround at least a portion of the teeth of the patient.” Independent claim 7 recites an apparatus that similarly includes “a mouthpiece configured and dimensioned to surround at least a portion of the teeth of the patient.”

Petitioner shows that bone foundation guide 20 of Llop '126 corresponds to the claimed fixation base that acts as a mounting jig for various other dental guides. *Id.* at 52 (citing Ex. 1003 ¶¶ 141–144; Ex. 1006 ¶¶ 26–30, Figs. 4, 5, 19). Further, Petitioner shows that anchoring struts 42 that removably attach to bone foundation guide 20 correspond to the claimed first dental guide. *Id.* (citing Ex. 1006 ¶¶ 28–29, 64, 95, 98, and 139); *see also id.* at 53–56 (citing Ex. 1003 ¶¶ 147–154; Ex. 1006 ¶¶ 98, 99, 136, code (57), Figs. 1, 3). According to Petitioner, “[a]lthough the anchoring struts 42 [of Llop '126] form a ‘mouthpiece’ according to its commonly understood meaning,” Petitioner acknowledges that during prosecution the Examiner determined that Llop '126 “did not disclose a ‘mouthpiece’ as claimed.” *Id.* at 54 (citing Ex. 1002, 224; Ex. 1003 ¶ 148).

In this case, Petitioner shows that Sichuan teaches “a mouthpiece configured and dimensioned to surround a portion of the teeth that is used to assure appropriate location to attach a guide to the patient’s maxillary or mandibular bone tissue.” Pet. 56; *see also id.* at 53–58. Petitioner explains that in Sichuan “a removable ‘positioning biteplate’” connects via rods to positioning guides, and that like Llop '126 “Sichuan describes the use of a patient’s teeth . . . to precisely position a base (maxillary osteotomy line guide plates 3 and/or positioning plate 4) in the patient’s mouth.” *Id.* at 56–57 (citing Ex. 1009 ¶¶ 7, 11, 12, 49, 63, 66, Figs. 1, 4, 6; Ex. 1003 ¶ 152). Sichuan’s positional biteplate “is created from tooth prints 11 of the patient with dentition data,” and a skilled artisan would understand that the tooth prints “conform precisely to the shape of the teeth, and that they would thus be configured and dimensioned to surround at least a portion of the

teeth of the patient.” *Id.* at 58 (citing Ex. 1003 ¶ 153; Ex. 1009 ¶¶ 7, 21, 27, 38, 66, code (57)).

In support of Petitioner, Dr. Erickson provides annotated versions of Figure 27 of Llop ’126, Figure 2 of Sichuan, as well as a combination of those structures labeled as “Llop126 + Sichuan (modified),” which are all reproduced below:



Id. at 47; Ex. 1003 ¶ 126. The illustrations reproduced above show on the top left Figure 27 of Llop ’126 with bone foundation guide prosthesis 200 annotated in green and teeth portion 204 in white, on the top right Figure 2 of Sichuan showing positioning biteplate 1 annotated in green, and centered

on the bottom a combination of these elements in green as proposed by Petitioner.

In regard to these illustrations, Dr. Erickson further explains as follows:

Sichuan discloses a biteplate that is configured and dimensioned to surround the teeth on both the maxillary and mandibular jaws, such that it forms a mouthpiece having a “hand and glove” relationship with the patient’s teeth. Ex. 1009, [0088] (“positioning biteplate 1 is provided with initial dental prints 11 disposed on the upper and lower surfaces thereof.”). The Sichuan mouthpiece includes precise recesses for the cusps of each tooth, thereby surrounding them.

. . .

A [person of ordinary skill in the art] would thus have understood that the modification to the [Llop ’126] anchoring struts could be made to engage with teeth on the either the same or opposing alveolar ridge as that being operated on. For example, a POSA could have easily modified [Llop ’126] to combine the teachings of Sichuan for the biteplate to engage with teeth on either same or opposite alveolar ridge as being operated on. [Llop ’126] discloses that a device (“prosthesis 200”) can be unitary with or removably attached to the ends of the struts 42, to facilitate positioning of the bone foundation guide. Ex. 1006, [0074, 0075, 0133], Figs. 27, 28. . . . A [person of ordinary skill in the art] could have modified the “unitary” embodiment of [Llop ’126] to replace the prosthesis portion with Sichuan’s positioning biteplate. Sichuan discloses that the biteplate may conform to both upper and lower teeth. Ex. 1009, [0088]. It would have been a simple matter for a POSA to substitute a biteplate for the prosthesis 200 in the “unitary” embodiment of Fig. 27 as [shown above with green annotations].

Id. ¶¶ 125–126.

Patent Owner first argues that Llop ’126 does not disclose a “mouthpiece,” as claimed, based on Patent Owner’s proposed construction of “mouthpiece.” Resp. 29–32. Petitioner, however, relies on Sichuan, in

combination with Llop '126, to show how the claimed “mouthpiece” would have been obvious, not on Llop '126, alone, which Patent Owner recognizes. *See id.* at 32 (stating “Dr. Erickson does not argue that [Llop '126] teaches or suggests a ‘mouthpiece . . . configured and dimensioned to surround at least a portion of the teeth of the patient’ but rather cites to Sichuan to teach this limitation” (alteration in original)).

Next, Patent Owner argues that “[t]he term ‘mouthpiece’ is not used in Sichuan at all.” *Id.* at 33. The issue, however, is not whether Sichuan uses the term “mouthpiece,” but whether Sichuan, in combination with Llop '126, teaches a “mouthpiece,” as claimed. According to Patent Owner, Sichuan does not teach a “mouthpiece,” because “the biteplate disclosed by Sichuan teaches tooth prints that are only 1 to 2 mm deep and that therefore only touch small portions of a patient’s teeth.” *Id.* (citing Ex. 1009 ¶ 80). In support, Patent Owner relies on Dr. Elo, who states that, as seen in Figure 1 of Sichuan, “the biteplate disclosed by Sichuan teaches tooth prints that are only 1 to 2 mm deep and that therefore only touch small portions of a patient’s teeth,” and that in his opinion “one of skill in the art would not understand a biteplate having tooth prints that are only 1 to 2 mm deep as being a ‘mouthpiece’, let alone a ‘mouthpiece . . . dimensioned and configured to enclose at least some teeth of the patient.’” Ex. 2007 ¶ 68 (alteration in original). The Challenged Claims, however, do not limit the mouthpiece to any particular depth.

We credit the testimony of Dr. Erickson in regard to how the combination of Llop '126 and Sichuan teaches a mouthpiece, as claimed, over the opposing testimony of Dr. Elo. Dr. Erickson’s testimony is supported by the asserted references. Dr. Elo’s testimony identifies no

support and fails to reflect either the scope of the Challenged Claims or Patent Owner's own proposed definition of "mouthpiece." Patent Owner argues that a "mouthpiece," must be construed to mean "a device that is inserted into the mouth and worn over the teeth." Resp. 6. Patent Owner does not show how the asserted combination does not disclose "a device that is inserted into the mouth and worn over the teeth" where the combination includes Sichuan's biteplate 1, which is indisputably inserted into the mouth and worn over the teeth. *See* Ex. 1009 Figs, 6, 9. Figure's 6 and 9 of Sichuan show a human skull with biteplate 1 inserted into the mouth and worn over the teeth. *Id.* Nor has Patent Owner shown that the depth of the tooth prints of Sichuan's biteplate 1 has any bearing on whether the biteplate is "a device that is inserted into the mouth and worn over the teeth," making Dr. Elo's opinion that "one of skill in the art would not understand a biteplate having tooth prints that are only 1 to 2 mm deep as being a 'mouthpiece'" inconsistent with Patent Owner's own definition of "mouthpiece."

We further are not persuaded by Patent Owner's argument, as supported by Dr. Elo, that "a biteplate having tooth prints that are only 1 to 2 mm deep" is not a mouthpiece "dimensioned and configured to enclose at least some teeth of the patient," regardless of whether we apply the plain and ordinary meaning of the claim terms or Patent Owner's proposed construction. *See* Resp. 28–34; Sur-reply 6–9. In particular, missing from Patent Owner's argument and Dr. Elo's testimony is any explanation for why the scope of the Challenged Claims requires something different than "a biteplate having tooth prints that are only 1 to 2 mm deep" to be "dimensioned and configured to enclose at least some teeth of the patient,"

whether we apply Patent Owner's proposed construction or the plain and ordinary meaning of the claim language.

We further credit the testimony of Dr. Erickson, who explains that in Sichuan "[t]he design of the tooth prints is obtained from digital data obtained by scanning a plaster model or 'scanning directly with an intraoral scanner to obtain the patient's data,'" and that this "permits a 'Boolean operation' to be used for designing the tooth prints onto the surfaces of the biteplate," and that the "Boolean operation is well-known in the field of digital dentistry and design, and would result in tooth prints on the biteplate that conform precisely to the shape of the teeth, and that they would thus surround each of the patient's teeth." Ex. 1003 ¶¶66 (citing Ex. 1009 ¶¶ 21, 27, 41, 68 *Id.*, [0021], [0041], [0068]). Patent Owner does not refute Dr. Erikson's testimony, but instead asserts that "[t]he 1 to 2 mm impressions in the bite plate of Sichuan . . . are no more of a 'mouthpiece . . . dimensioned and configured to surround at least a portion of the teeth' than the struts and tooth molds of Llop '126." Sur-reply 8–9. Petitioner, however, does not contend that Llop '126 discloses the recited mouthpiece, because Petitioner relies on Llop '126 in combination with Sichuan to show how the recited mouthpiece was taught by the prior art. In other words, we acknowledge that the Examiner found the Challenged Claims patentable over Llop '126, but that determination is not before us and we need not resolve whether Llop '126, alone, also teaches the recited mouthpiece.

In sum, as can be seen from Figure 2 of Sichuan, biteplate 1 is U-shaped, resembles a "mouth guard," and surrounds/encloses the top surface and side surfaces of multiple teeth. Ex. 1009 Fig. 2. Based on all of the evidence presented, we find for the preceding reasons that Petitioner has

sufficiently shown that Llop '126, in combination with Sichuan, teaches a 'mouthpiece . . . configured and dimensioned to surround at least a portion of the teeth of the patient,' as required by the Challenged Claims. For the same reasons, we further find that the evidence likewise shows that the asserted references teach a "device that is inserted into the mouth and worn over the teeth . . . configured and dimensioned to enclose at least some teeth of the patient," satisfying Patent Owner's proposed claim construction.

2. Whether Petitioner provides a sufficient rationale in support of the asserted combination of Llop '126 and Sichuan

Petitioner shows that a person of ordinary skill would have had sufficient reasons to modify the anchoring strut system of Llop '126 based on Sichuan's teaching of a positioning mouthpiece to "ensure proper placement of the fixation base [of Llop '126] relative to the surgical site." Pet. 44 (citing Ex. 1003 ¶¶ 121–133, Ex. 1009 ¶¶ 3, 5). Petitioner shows that one of ordinary skill in the art would have had reason to combine Sichuan and Llop '126 "to ensure proper placement of the fixation base relative to the surgical site" by modifying the anchoring strut system of Llop '126 by constructing it with the positioning mouthpiece as taught by Sichuan. *Id.* (citing Ex. 1003 ¶¶ 121–133; Ex. 1009 ¶¶ 3, 5). Further, Petitioner shows that one of ordinary skill in the art "would have understood from Sichuan the benefits of modifying the anchoring struts of [Llop '126] to include a mouthpiece, in order to improve the positioning of a fixation base for attachment to a patient's jawbone," and thus "would have been motivated to modify the anchoring strut system of [Llop '126] by using a biteplate as taught by Sichuan," at least for "non-endentulous cases where teeth remain." *Id.* at 45–46 (Ex. 1003 ¶¶ 124–126). Petitioner also asserts

that one of ordinary skill in the art would have “understood the benefit of modifying [Llop ’126] to use the Sichuan mouthpiece in edentulous cases, where teeth are not present on the ridge of the surgical site, but are present only on the opposite alveolar ridge.” *Id.* at 47 (citing Ex. 1003 ¶ 127). Petitioner further shows that there would have been a reasonable expectation of success in the proposed combination of Llop ’126 and Sichuan, because “Sichuan discloses a set of osteotomy guide plates that function similar to the [Llop ’126] base as it is positioned and attached to the patient’s jawbone and used as a reference for subsequent surgical osteotomy procedures,” and the modification would have been “straightforward” and “would not alter the operating principles of [Llop ’126].” *Id.* at 49–50 (citing Ex. 1003 ¶¶ 122, 126–133).

Patent Owner’s arguments to the contrary are unavailing. Resp. 34–38; Sur-reply 9–10. First, Patent Owner argues that Sichuan is non-analogous art. Resp. 34–38. “To be considered within the prior art for purposes of the obviousness analysis, a reference must be analogous.” *Circuit Check Inc. v. QXQ Inc.*, 795 F.3d 1331, 1335 (Fed. Cir. 2015) (citing *Wang Labs., Inc. v. Toshiba Corp.*, 993 F.2d 858, 864 (Fed. Cir. 1993)). “Two separate tests define the scope of analogous prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor’s endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.” *Sanofi-Aventis Deutschland GmbH v. Mylan Pharms. Inc.*, 66 F.4th 1373, 1377 (Fed. Cir. 2023) (quoting *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004)).

Patent Owner states that it disagrees with Dr. Erickson's characterization of Llop '126 and Sichuan as being "readily combinable because each concerns the same field of endeavor." Resp. 35. According to Patent Owner, "Sichuan is directed to a system for subapical osteotomy, a very rare procedure, and a procedure that is very different from implant installation and not performed by a person of ordinary skill in the art as defined in this proceeding." *Id.* (citing Ex. 2007 ¶ 87). Patent Owner emphasizes the credentials of Dr. Elo, and argues, based on Dr. Elo's testimony, that "a person of ordinary skill in the art of implant dentistry is not trained how to perform a subapical osteotomy, is not qualified to perform a subapical osteotomy, and would never perform a subapical osteotomy," and that "[a] person of ordinary skill in the art would not look to a device for performing subapical osteotomies, which are used in the field of maxillofacial surgery or plastic surgery, and not general dentistry." *Id.* at 35–36 (citing Ex. 2007 ¶ 87). Patent Owner further asserts that "[t]he guide plates 3 in Sichuan are mounted very high in the patients' mouth up by the cheekbone," and that "[g]eneral dentists who perform implant surgeries are unlikely to want to cut up that high, because such surgery is more invasive than they are comfortable with." *Id.* at 36. Thus, Patent Owner reasons that "[o]ne of skill in the art of implant system design would not look at the art relating to subapical osteotomies." *Id.* (citing Ex. 2007 ¶ 88).

Even if Sichuan is not from the same field of endeavor, it is still analogous art if it is reasonably pertinent to the particular problem with which the inventor of the '209 patent is involved. Petitioner explains that the '209 patent "attempts to solve the problem of allowing for a precise installation of a guide (fixation base) onto a patient's jawbone structure,

such that it can be used as a reference in dental surgery.” Reply 8 (citing Ex. 1001, 5:7–17). Petitioner also shows that “Sichuan seeks to solve the same problem of allowing for precise installation of a guide (guide plate) onto a patient’s jawbone structure, such that it can be used as a reference in dental surgery.” *Id.* at 9 (citing Ex. 1003 ¶¶ 122, 123; Ex. 1009 ¶ 48).

Patent Owner does not refute Petitioner’s showing that Sichuan is reasonably pertinent to a problem the ’209 patent also seeks to resolve. *See generally* Sur-reply 9–10. Instead, Patent Owner argues that “a subapical osteotomy is not performed by a person of ordinary skill in the art,” and that a person of ordinary skill in the art would only look to devices in the field of “general dentistry,” not maxillofacial surgery or plastic surgery. *Id.* at 9.

Petitioner states as follows:

Even assuming that a subapical osteotomy procedure as disclosed in Sichuan is a specialized form of dental surgery performed by oral/maxillofacial surgeons with certain training (Response, 35), neither [Patent Owner] nor Dr. Elo claim that an ordinarily skilled dental practitioner who performs implant surgery would not at least be *aware* of such subapical osteotomy, or would not have had access to materials and documentation on the subject in, for example, a dental school library.”

Reply 9. The relevant issue is not whether a person of ordinary skill in the art would perform a particular type of surgery, but whether Sichuan is reasonably pertinent to the problem to be addressed by the ’209 patent. Sichuan is analogous art because Petitioner has shown that Sichuan is reasonably pertinent to resolving how to provide for a precise installation of a guide (fixation base) onto a patient’s jawbone structure. Reply 8–9 (citing Ex. 1001, 5:7–17; Ex. 1003 ¶¶ 122, 123; Ex. 1009 ¶ 48).

Patent Owner further argues that “a person of skill in the art would not be motivated to combine [Llop ’126] with Sichuan because there is no

expectation that the biteplate of Sichuan would be more effective than the struts with tooth shaped indentations or with a temporary prosthesis for matching with teeth of the opposing jaw that are already disclosed in [Llop '126]. Resp. 36 (citing Ex. 2007 ¶ 89). Petitioner need not show that the asserted combination is “more effective” to support the rationale for the asserted combination. *See in re Fulton*, 391 F.3d 1195, 1202 (Fed. Cir. 2004) (The prior art need not “teach that a particular combination is preferred or ‘optimal,’ for the combination to be obvious.”).

Next, Patent Owner argues there would be no expectation of success because Sichuan’s biteplate “has impressions of teeth on the jaw to be operated on,” while in Llop '126 “the teeth of the jaw to be operated on are removed prior to use of the struts.” *Id.* (citing Ex. 2007 ¶ 90). Patent Owner’s argument is not persuasive for the reasons provided by Petitioner, as follows:

[Patent Owner’s] argument against suitability results from a misreading of [Llop '126] to require that “the teeth of the jaw to be operated on are removed prior to use of the struts.” Response, 36. [Patent Owner] provides no citation for this statement, which is contradicted by [Llop 126’s] own teachings: “Any teeth at the dental implant surgical site *can* be removed. *If the patient’s dental health has declined enough, the alveolar ridge supporting the dental surgical site could be made edentulous.*” EX1006, [0140] (emphasis added). This passage indicates that all teeth are not always removed on the jaw to be operated in Llop. Moreover, even if the teeth are removed, the Challenged Claims do not exclude mouthpieces that engage the opposite teeth as compared to the jaw being operated on.

Reply 12. Lastly, Patent Owner disputes that Sichuan’s biteplate “achieves equally accurate results as mouthpieces that are taller and which extend further up the tooth,” and would have additional benefits, such as

being easier to manipulate. *Id.* at 36–37. Patent Owner argues that a biteplate is not effective “[w]ithout many teeth present, or when many of the teeth are loose,” and that “for a biteplate to be used, the opposing jaw would need to be closed.” *Id.* at 37–38. Patent Owner’s argument is not persuasive because, as noted above, Petitioner need not show that the asserted combination is “more effective” to support the rationale for the asserted combination. *See in re Fulton*, 391 F.3d at 1202.

3. *Objective Indicia of Non-Obviousness*

Having considered Petitioner’s evidence of obviousness, we now consider and weigh Patent Owner’s evidence regarding alleged objective indicia of non-obviousness. *See Resp.* 49–64. According to Patent Owner, “The long felt need for a solution . . . , the failure of others to satisfy that need, the immediate commercial success of the invention, the praise the invention received, and the copying of the invention by others (including Petitioner) confirm the claims were not obvious.” *Id.* at 64. Below we first address nexus, followed by each type of objective indicia of non-obviousness offered by Patent Owner. For the reasons that follows, we determine that Patent Owner has not shown that a nexus may be presumed. Even if a nexus is presumed, the objective indicia of non-obviousness offered by Patent Owner is weak.

a) *Nexus*

Patent Owner bears the burden of establishing nexus. *WMS Gaming Inc. v. Int’l Game Tech.*, 184 F.3d 1339, 1359 (Fed. Cir. 1999). A presumption of nexus is only appropriate if “the patentee shows that the asserted objective evidence is tied to a specific product and that product embodies the claimed features, and is coextensive with them.” *Fox*

Factory, Inc. v. SRAM, LLC, 944 F.3d 1366, 1373 (Fed. Cir. 2019) (internal quotation marks omitted). The coextensiveness requirement is not met simply by showing “the patent claims broadly cover the product that is the subject of the evidence of secondary considerations.” *Id.* at 1377. Rather, coextensiveness relates to “the degree of correspondence between a product and a patent claim.” *Id.* at 1374. And, although “the existence of one or more unclaimed features, standing alone” does not necessarily defeat coextensiveness (*id.*), “the concept of unclaimed features is best viewed as part of a spectrum.” *Teva Pharma. Int’l GmbH v. Eli Lilly and Co.*, 8 F.4th 1349, 1361 (Fed. Cir. 2021).

Accordingly, the presumption of nexus analysis requires the consideration of the unclaimed features of the stated product to determine their level of significance and impact on the correspondence between the claims and said product. *See Fox Factory*, 944 F.3d at 1375. So, to establish a nexus, Patent Owner should address the differences between the prior art and the claimed invention, and discuss the extent to which the evidence of secondary considerations derived from any “unique characteristics” of the claimed invention. *See Campbell Soup Co. v. Gamon Plus, Inc.*, 10 F.4th 1268, 1278 (Fed. Cir. 2021) (“[T]o establish nexus, [the patent owner] needed to present evidence that the commercial success and praise of the [product] derived from those ‘unique characteristics.’”) (citing *Fox Factory*, 944 F.3d at 1373–74). Simply providing evidence tied to features already present in the prior art does not satisfy the inquiry. *Id.* (“objective indicia must be linked to a . . . patent claim’s unique characteristics”); *Fox Factory*, 944 F.3d at 1378 (stating that for patents claiming combinations of prior art features, a patentee must show that the

secondary considerations evidence is “attributable to the claimed combination of [prior art features], as opposed to, for example, prior art features in isolation or unclaimed features”).

Patent Owner’s evidence of objective indicia of non-obviousness is largely based on a product Patent Owner identifies as the CHROME GuidedSmile. Resp. 49. Patent Owner provides a table that purportedly shows how the CHROME GuidedSmile is coextensive with the ’209 patent. *Id.* at 49–61. Rather than support Patent Owner’s arguments, the table provided by Patent Owner makes unequivocally clear that the CHROME GuidedSmile is not coextensive with the ’209 patent. *See id.* at 53. Patent Owner expressly states in the table in regard to the CHROME GuidedSmile that “[t]he Fixation Base is designed using patent-pending floating guide technology; meaning the guide does not contact bone and is supported by divergent pin placement.” *Id.* at 53 (citing Ex. 2006 ¶ 10, Ex. 1017, 17). The ’209 patent is not directed to “floating guide technology” and the Challenged Claims do not recite limitations directed to a guide that does not contact bone or that requires divergent pin placement. Thus, features of the CHROME GuidedSmile that Patent Owner identifies as distinguishing the product are unclaimed in the ’209 patent, making clear that the CHROME GuidedSmile is not coextensive with the ’209 patent and that a presumption of nexus is not warranted. Additional evidence supports this determination.

For example, Mr. Banks, the President of GuidedSMILE LLC, the company that handles the CHROME GuidedSmile product, provides a declaration in support of objective indicia of non-obviousness. *See* Ex. 2006. Mr. Banks makes no mention in his declaration of the “patent-pending floating guide technology,” the lack of bone contact, or the

divergent pin placement used in the CHROME GuidedSmile. *See id.* But during his deposition, Mr. Banks testified in regard to the CHROME GuidedSmile as follows:

Q. What advantages did using the metal allow?

A. Well, it meant no flex first, which is obviously key for predictability. But the other key to the product is that it doesn't touch bone, it floats labial to the bone. There's a gap. And in order for that gap to -- in order for that gap to be designed that way, we had to have a material that was strong, that was stronger than plastic, that's not resting on the bone and asking the bone for support.

Ex. 1046, 44:15–45:17; *see also id.* at 55:21–56:12 (Mr. Banks confirming that the lack of contact with the bone in the CHROME GuidedSmile is a point of distinction from the competition).

Further, Patent Owner does not show how the degree of correspondence between the CHROME GuidedSmile and the Challenged Claims supports a showing of nexus. Patent Owner does not discuss the extent to which the evidence of secondary considerations derived from any “unique characteristics” of the claimed invention, as opposed to unclaimed characteristics. Although Patent Owner suggested unclaimed features like the “patent-pending floating guide technology” were “marketing puffery,” and not “significant,” Patent Owner states that “unfortunately it falls on the panel to try to figure out what is significant and what is not.”

Tr. 36:23–39–11. The burden, however, is on Patent Owner to provide sufficient evidence and explanation to support its arguments, and here Patent Owner provides no evidence upon which to determine that its objective indicia of nonobviousness is linked to the '209 patent claim's unique characteristics, as opposed to unclaimed features. In sum, we find that

Patent Owner has not shown that a nexus between the Challenged Claims and the CHROME GuidedSmile may be presumed, and that the evidence does not otherwise support any more than a weak nexus in light of the failure to show coextensiveness or to explain how the objective indicia of nonobviousness is linked to the '209 patent claim's unique characteristics.

b) Long-felt Need

According to Patent Owner, “[p]ersons of ordinary skill in the art long felt a need for a guided surgical product to improve the efficiency and accuracy of full-arch tooth replacement.” Resp. 61 (citing Ex. 2006 ¶¶ 1–6). According to Patent Owner, in an attempt to satisfy this need ROE Dental Laboratory, Inc. (‘ROE’) (GuidedSMILE, LLC’s predecessor), launched a product that lacked a “mouthpiece for locating the pins” that was not successful, then “exclusively licensed CHROME GuidedSmile” from Patent Owner, after which, the CHROME GuidedSmile “was immediately a successful product.” *Id.* at 61–62 (citing Ex. 2006 ¶ 7).

As Petitioner explains, there are several problems with Patent Owner’s assertions. First, the CHROME GuidedSmile is not a single product, but a family of products (*see* Ex. 1024; Ex. 1046, 13:19–16:20), and Patent Owner has not shown what products within that family both practice the claimed invention and are attributable to satisfying an unmet need. Second, there is no evidence supporting the assertion that a prior product by ROE was not a success, other than Mr. Banks’s testimony that it “was not a commercial success.” Ex. 1006 ¶ 7. Third, Mr. Banks referenced the “nSequence” guides as an early product that included “tooth supported guides,” but that lacked “predictability,” but also acknowledged that the “nSequence product” was still being produced and was a “successful

product.” *Id.* at ¶ 5. Taken as a whole, the evidence suggests that the family of products under the CHROME GuidedSmile may have provided improvements over earlier products, but does not establish an unmet need that was satisfied by a specific product that practices the claimed invention.

c) Commercial Success

Patent Owner provides a table titled “Total GuidedSMILE Sales” showing a dollar amount for each year from 2017 to 2023. Resp. 62 (citing Ex. 2006 ¶ 16). Petitioner argues that the chart “includes sales of products that are not covered by the ’209 patent claims, such as the GuidedSmile products using an edentulous pin guide and the plastic GuidedSmile Lite.” Reply 22. Petitioner argues there is no comparison to prior sales of other products and that increased marketing efforts were made that may account for the increased sales. Patent Owner suggests that the testimony of Mr. Banks “about commercial success is evidence of commercial success independent of the sales chart that was submitted as part of Patent Owner’s response.” Tr. 38:10–12. Although we find Mr. Banks testimony to be credible, it does not substantively show how a product tied to the claimed invention was commercially successful.

d) Industry Praise

In regard to industry praise, Patent Owner states as follows:

Dentistry Today gave CHROME GuidedSmile eleven awards across five categories: Editors' Choice award winner - 2023, 2024; Top Innovative Products Winner - 2023, 2024; Innovation Spotlight Winner - 2023, 2024; Top 100 Products Winner - 2022, 2023, 2024; Top 25 Aesthetic/Restorative Products Winner - 2023, 2024. Additionally, CHROME GuidedSmile was given an award for Product or Innovation of the Year at the 2022 U.K. Dental Industry Awards.

Resp. 63 (citing Ex. 2006 ¶ 17). Patent Owner does not provide any explanation of the basis for any of these awards. Petitioner argues that the awards “are either paid advertisements or are based on the number of readers who circled a magazine feedback card to request additional information.” Reply 23–24 (citing Ex. 1033, 2; Ex. 1034; Ex. 1036, 2; Ex. 1046, 82:12–83:3, 89:20–90:2). Patent Owner does not substantively show how a product tied to the claimed invention was recipient of industry praise.

e) Copying

In regard to alleged copying, Patent Owner argues that “Petitioner used to sell a guide where a mouthpiece did not attach to a fixation base for purposes of properly locating the fixation base,” and that “[a]fter CHROME GuidedSmile was introduced, [Petitioner] changed its product to include a mouthpiece that located the fixation base.” Resp. 63–64 (citing links to two YouTube videos and Ex. 2006 ¶ 18). The Response and Mr. Banks’s declaration include what appear to be single images from each video showing a product under the heading “Magnetix PPG” with “3D Diagnostix in the top left corner of the image. Patent Owner provides no explanation of what is shown in the images in the Response, nor does Mr. Banks in his Declaration. *See id.* at 63–64; Ex. 2006 ¶ 18.

Petitioner argues as follows:

[A] copying analysis requires “comparison of the competitor’s product with the allegedly copied patented product.” *Medtronic, Inc. v. Teleflex Innovations S.a.r.l.*, 70 F.4th 1331, 1340 (Fed. Cir. 2023). Mr. Banks admits that there are key differences between the CHROME GuidedSmile and 3DDX products. EX1046, 97:7-99:7 (e.g., 3DDX product does not use a floating fixation base, does not use metal, and uses

magnets rather than locking pins). [Patent Owner] has not put forth any “actual evidence of copying efforts as opposed to mere allegations regarding similarities between the accused product and a patent.” *Medtronic*, 70 F.4th at 1340.

Reply 24–25. We agree with Petitioner that Patent Owner has not produced evidence of actual copying, only evidence to suggest that Petitioner made changes to its product after CHROME GuidedSmile was introduced.

4. Conclusion

Considering the totality of the evidence regarding claims 1–3, 7, 10, 14, 16, and 17, including objective indicia of non-obviousness, we determine that Petitioner has established, by a preponderance of the evidence, that claims 1–3, 7, 10, 14, 16, and 17 would have been obvious over Llop ’126 and Sichuan. Petitioner shows by a preponderance of the evidence that the combination of Llop ’126 and Sichuan teaches each limitation of claims 1–3, 7, 10, 14, 16, and 17, and provides a persuasive rationale for the asserted combination, as explained in detail above, to address a known problem. Petitioner also has shown how the asserted combination can be combined in a practical manner and we credit the testimony of Dr. Erickson as persuasive and supported by the asserted art. *See, e.g.*, Ex. 1006 ¶¶ 121–33.

By contrast, Patent Owner has not established a sufficient nexus between any of the Challenged Claims and a particular product out of a family of products Patent Owner identifies as CHROME GuidedSmile. Even assuming some nexus, we give little weight to the alleged evidence of long-felt need as the evidence shows there were products available (e.g., the “nSequence” guides) that addressed the identified problem, even if there was room for improvement. The evidence of commercial success and industry praise is given little weight because Patent Owner does not show how the

evidence is based on a product tied to the claimed invention or any unique feature of the claimed invention. Nor is there any substantial evidence of actual copying. The relative strength of Petitioner's showing as compared to Patent Owner's weak objective indicia evidence of non-obviousness leads us to conclude in considering all of the evidence as a whole that the subject matter of claims 1–3, 7, 10, 14, 16, and 17 would have been obvious to a person having ordinary skill in the art.

F. Asserted Obviousness Based on Llop '126, Sichuan, and Groscurth

Petitioner contends that “assuming the claims are construed to limit the material of the drill guide and fixation base, then the combination of Llop '126, Sichuan, and Groscurth renders the subject matter of claims 1–3, 7, 10, 14, 16, and 17 obvious. Pet. 74–78. Petitioner's contentions are supported by Dr. Erickson. Ex. 1003 ¶¶ 199–209. In this combination, Petitioner argues a person of ordinary skill in the art “would have been motivated to further modify the Llop126/Sichuan system to form the fixation base and drill guide of metal, to increase rigidity and stability.” Pet. 75 (citing Ex. 1003 ¶ 201). Specifically, Petitioner shows that Groscurth identified having a fixation base that is not rigid or stable as a problem, recognized the need for a fixation base / drill guide system that has “great rigidity so that it is very stable in the patient's mouth as well as on the physical anatomical diagnostic model,” and resolved the identified problem by using metal for the drill guide and fixation base. *Id.* at 75–76 (citing Ex. 1003 ¶¶ 202–205; Ex. 1011, code (57), 1:56–2:11, 2:46–52, 6:35–40, 13:1–4).

Patent Owner does not raise any additional arguments with regard to the asserted combination of Llop '126, Sichuan, and Groscurth beyond the

arguments directed to the combination of Llop '126 and Sichuan. Resp. 38–39 (stating Groscurth is only cited in the Petition “for teaching a drill guide and a fixation base made of metal,” and that “Groscurth fails to remedy the defects of [Llop '126] and Sichuan”).

Patent Owner does not dispute Petitioner’s reliance on Groscurth as teaching the use of metal for a drill guide and fixation base, and we conclude that Petitioner has shown by a preponderance of the evidence that the subject matter of claims 1–3, 7, 10, 14, 16, and 17 would have been obvious over Llop '126, Sichuan, and Groscurth for the same reasons discussed above with regard to the combination of Llop '126 and Sichuan, along with Petitioner’s undisputed showing that a person of ordinary skill in the art would have had reason to use metal for rigidity and stability, as taught by Groscurth.

G. Asserted Obviousness Based on Llop '126, Sichuan, and Scherer

Petitioner contends that the subject matter of claims 5, 6, and 12 would have been obvious over Llop '126, Sichuan, and Scherer, assuming “drill guide” and “fixation base” are not limited to metal or metallic alloy). Pet. 93–96. Petitioner’s contentions are supported by Dr. Erickson. Ex. 1003 ¶¶ 269–274. Claims 5, 6, and 12 are directed to the use of an “abutment guide base” as a “third dental guide” that is attachable to the fixation base to install abutments.

Patent Owner does not raise any additional arguments with regard to the asserted combination of Llop '126, Sichuan, and Groscurth beyond the arguments directed to the combination of Llop '126 and Sichuan. Resp. 38–39 (stating Groscurth is only cited in the Petition “for teaching a drill guide

and a fixation base made of metal,” and that “Groscurth fails to remedy the defects of [Llop ’126] and Sichuan”).

Patent Owner does not dispute Petitioner’s reliance on Groscurth as teaching the use of metal for a drill guide and fixation base, and we conclude that Petitioner has shown by a preponderance of the evidence that the subject matter of claims 1–3, 7, 10, 14, 16, and 17 would have been obvious over Llop ’126, Sichuan, and Groscurth for the same reasons discussed above with regard to the combination of Llop ’126 and Sichuan, along with Petitioner’s undisputed showing that a person of ordinary skill in the art would have had reason to use metal for rigidity and stability, as taught by Groscurth.

H. Asserted Obviousness Based on Llop ’126, Sichuan, Scherer, and Groscurth

Patent Owner does not raise any additional arguments with regard to the asserted combination of Llop ’126, Sichuan, and Groscurth beyond the arguments directed to the combination of Llop ’126 and Sichuan. Resp. 38–39 (stating Groscurth is only cited in the Petition “for teaching a drill guide and a fixation base made of metal,” and that “Groscurth fails to remedy the defects of [Llop ’126] and Sichuan”).

Patent Owner does not dispute Petitioner’s reliance on Groscurth as teaching the use of metal for a drill guide and fixation base, and we conclude that Petitioner has shown by a preponderance of the evidence that the subject matter of claims 1–3, 7, 10, 14, 16, and 17 would have been obvious over Llop ’126, Sichuan, and Groscurth for the same reasons discussed above with regard to the combination of Llop ’126 and Sichuan, along with Petitioner’s undisputed showing that a person of ordinary skill in the art

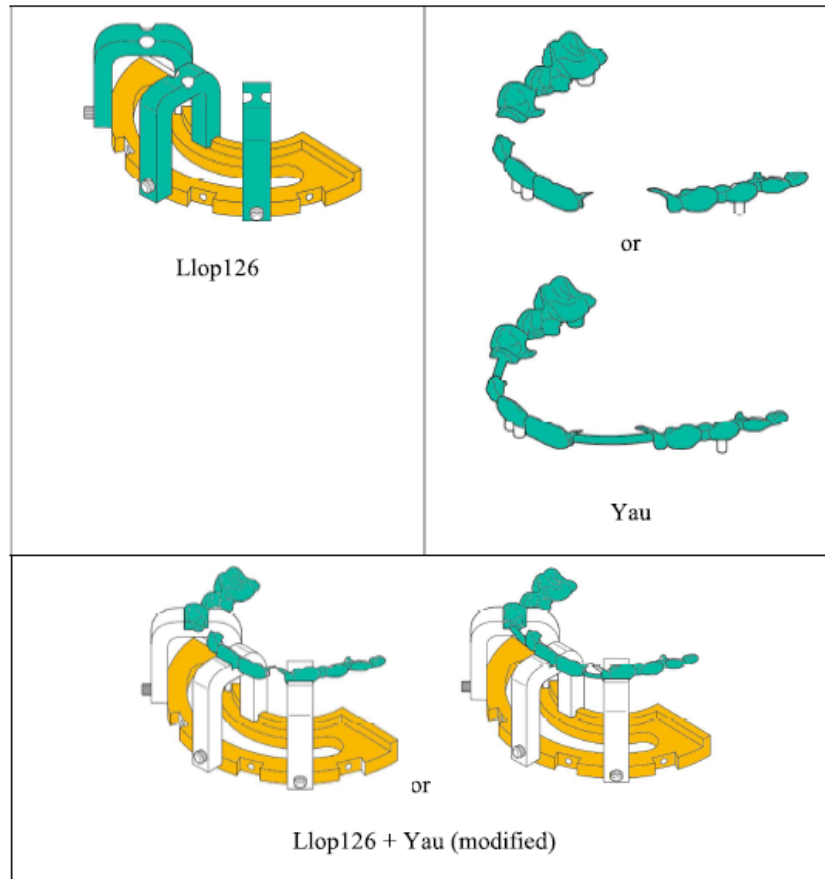
would have had reason to use metal for rigidity and stability, as taught by Groscurth.

I. Asserted Obviousness Based on Llop '126 and Yau, and in further Combination with Groscurth

In two additional asserted grounds Petitioner relies on Yau, rather than Sichuan, as teaching “a mouthpiece configured and dimensioned to surround a portion of the teeth.” Pet. 78–92; Reply 13–15. Petitioner relies on the testimony of Dr. Erickson as support. Ex. 1003 ¶¶ 210–268.

In particular, Petitioner contends that “Yau describes using a ‘tooth mold’ as an ‘upper guide member’ that attaches to a ‘middle’ and ‘lower’ guide member so that they may be fixed to the patient’s gingiva.” Pet. 84 (citing Ex. 1010 ¶¶ 7, 8, 16–25). According to Petitioner, a person of ordinary skill would have understood “from Yau’s description of a ‘tooth mold adapted for tight engagement with the natural teeth’ and the accompanying figures that the tooth mold is configured and dimensioned to surround at least a portion of the patient’s teeth.” *Id.* at 85 (citing Ex. 1003 ¶ 226).

In support of Petitioner, Dr. Erickson provides three images identified as “Llop126,” “Yau,” and “Llop126 + Yau,” which are all reproduced below:



Ex. 1003 ¶ 216. The illustrations reproduced above show on the top left an image that resembles a different view of the bone foundation guide shown in Figure 5 of Llop ’126. However, the image above labeled “Llop126” does not appear in Llop ’126, and neither Petitioner nor Dr. Erickson adequately address the source of the image. Similarly, the illustrations reproduced above show on the top right an image that resembles a portion of Figure 2 of Yau (Yau’s upper guide member 11 comprised of tooth mold 12), located above an image that appears to show the parts of guide member 12 as a single member, which is an image that appears nowhere in Yau. Centered

on the bottom of the illustration above are two images depicting two possible combinations of the elements from Llop '126 and Yau, as proposed by Petitioner.

Dr. Erickson states as follows:

Yau discloses use of a tooth mold that is configured to surround the patient's teeth, such that it forms a "hand and glove" relationship with the patient's teeth. in order to prevent sliding when positioning a surgical guide base. Ex. 1010, [0007], [0017], [0022]. The Yau mouthpiece includes a tooth mold that is "adapted for tight engagement with natural teeth or temporary dentures of the opposite jaw when the patient bites." *Id.*, [0017], Figs. 1, 2. A [person of ordinary skill in the art] would also understand that Yau's upper guide member 11 may alternatively and/or in addition represent occlusal tables for the patient's opposing natural teeth, adapted for tight engagement. The Yau mouthpiece includes precise recesses for the cusps of each tooth, thereby surrounding them. *Id.*

Id. ¶ 215.

Patent Owner argues that "neither [Llop '126] nor Yau, considered alone or in combination teach or suggest a mouthpiece 'configured and dimensioned to surround at least a portion of the teeth of the patient' as recited in all the contested claims." Resp. 39. Patent Owner argues that Yau's tooth molds 12 is "adapted for engagement with the natural teeth or temporary dentures of the opposite jaw when the patient bites, but one skilled in the art would not describe the tooth molds 12 as surrounding the teeth on the opposite jaw." *Id.* at 41 (emphasis omitted) (citing Ex. 1010 ¶ 17; Ex. 2007 ¶ 78). According to Patent Owner, "there is little difference between the structure of Yau's tooth molds 12 and the structures of [Llop '126]," which the Examiner considered and determined did not

disclose a mouthpiece “configured and dimensioned to surround at least portion of the teeth of the patient.” *Id.* (citing Ex. 2007 ¶ 78).

Based on the evidence and argument presented, we determine that Petitioner has not shown by a preponderance of the evidence that Yau teaches or suggests “configured and dimensioned to surround at least a portion of the teeth of the patient,” as required by the Challenged Claims. Yau teaches “an upper guide member comprising a tooth mold for tight engagement with the natural teeth or temporary dentures of the opposite jaw when the patient bites.” Ex. 1010 ¶ 7; *see also id.* at ¶ 22 (stating “let the patient practice biting, enabling the tooth mold 12 of the upper guide member 11 to be forced into tight engagement with the natural teeth or temporary dentures of the patient’s opposite jaw”). Petitioner directs us to no express disclosure in Yau that tooth molds 12 “surround at least a portion of the teeth.” Even the figures of Yau Petitioner refers to fail to show *any* engagement between tooth molds 12 and the natural teeth of the patient. *See* Pet. 79–85 (citing Ex. 1010, Figs. 1–4). In effect, Petitioner would have us construe “configured and dimensioned to surround at least a portion of the teeth of the patient,” as required by the Challenged Claims, to mean “configured and dimensioned to provide tight engagement with at least a portion of the teeth of the patient.” Petitioner, however, provides no sufficient evidence or argument to support such a construction, nor do we discern from the evidence produced that a person of ordinary skill in the art would have understood a feature that is in “tight engagement” with at least a portion of the teeth of the patient would “surround” a portion of the teeth of the patient.

Dr. Erikson’s opinion that Yau’s tooth mold “forms a ‘hand and glove’ relationship with the patient’s teeth” is not persuasively supported by the portions of Yau cited by Dr. Erikson. Ex. 1003 ¶ 215 (citing Ex. 1010 ¶¶ 7, 17, 22). Given Yau describes that a patient may practice biting to cause the tooth mold “to be force into tight engagement” with the teeth of the opposite jaw, there is no evidence to suggest that a person of ordinary skill in the art would view such action as akin to a “hand and glove” relationship. Because Dr. Erikson’s opinion that a person of ordinary skill in the art would have understood “that Yau’s upper guide member 11 may alternatively and/or in addition represent occlusal tables for the patient’s opposing natural teeth, adapted for tight engagement,” and includes precise recesses for the cusps of each tooth, thereby surrounding them,” is unsupported by any persuasive underlying evidence, we give it little weight.

In sum, because Petitioner has not shown by a preponderance of the evidence that the combination of Llop ’126 and Yau teaches or suggests a mouthpiece “configured and dimensioned to surround at least a portion of the teeth of the patient,” Petitioner has not shown that any of the Challenged Claims would have been obvious over Llop ’126 and Yau. Petitioner’s further reliance on Groscurth with respect to the material of the drill guide and fixation base does not resolve the deficiencies with Petitioner’s reliance on Llop ’126 and Yau in regard to a mouthpiece “configured and dimensioned to surround at least a portion of the teeth of the patient.” Accordingly, for the same reasons discussed above, because Petitioner has not shown by a preponderance of the evidence that the combination of Llop ’126, Yau, and Groscurth teaches or suggests a mouthpiece “configured and dimensioned to surround at least a portion of the teeth of the

patient,” Petitioner has not shown that any of the Challenged Claims would have been obvious over Llop ’126, Yau, and Groscurth.

IV. CONCLUSION

For the foregoing reasons, we are persuaded that Petitioner has established by a preponderance of the evidence that claims 1–3, 5–7, 10, 12, 14, 16, and 17 of the ’209 patent are unpatentable.¹³

Claims	35 U.S.C. §	References/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–3, 7, 10, 14, 16, 17	103	Llop ’126, Sichuan	1–3, 7, 10, 14, 16, 17	
1–3, 7, 10, 14, 16, 17	103	Llop ’126, Sichuan, Groscurth	1–3, 7, 10, 14, 16, 17	
5, 6, 12	103	Llop ’126, Sichuan, Scherer	5, 6, 12	
5, 6, 12	103	Llop ’126, Sichuan, Scherer, Groscurth	5, 6, 12	
1–3, 7, 10, 14, 16, 17	103	Llop ’126, Yau		1–3, 7, 10, 14, 16, 17
1–3, 7, 10, 14, 16, 17	103	Llop ’126, Yau, Groscurth		1–3, 7, 10, 14, 16, 17
Overall Outcome			1–3, 5–7, 10, 12, 14, 16, 17	

¹³ 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, 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).

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–3, 5–7, 10, 12, 14, 16, and 17 of the '209 patent have been shown to be unpatentable by a preponderance of the evidence¹⁴; and

FURTHER ORDERED that, because this is a Final Written Decision, the 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.

¹⁴ Claims 11 and 13 of the '209 patent were disclaimed. *See* Disclaimer.

PGR2024-00040
Patent 11,806,209 B2

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