

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

STRAUMANN USA, LLC,  
Petitioner,

v.

SMART DENTURE CONVERSIONS, LLC,  
Patent Owner.

---

PGR2025-00054  
Patent 12,156,781 B1

---

Before MICHAEL J. FITZPATRICK, ERIC C. JESCHKE, and  
RYAN H. FLAX, *Administrative Patent Judges*.

FLAX, *Administrative Patent Judge*.

DECISION  
Granting Institution of Post-Grant Review  
*35 U.S.C. § 324*

## I. INTRODUCTION

Smart Denture Conversions, LLC (“Patent Owner”) is the owner of U.S. Patent 12,156,781 B1 (Ex. 1001, “the ’781 patent”).<sup>1</sup> Paper 4, 1 (Patent Owner Mandatory Notices). On April 30, 2025, Straumann USA, LLC (“Petitioner”) filed a Petition for post-grant review challenging the patentability of claims 1–16 of the ’781 patent. Paper 2, 1 (“Pet.”). On September 25, 2025, Patent Owner filed a Preliminary Response to the Petition. Paper 10 (“Prelim. Resp.”). Patent Owner requested discretionary denial (Paper 7); however, on October 17, 2025, the Deputy Director referred the case to the Board. Paper 11.

Under 37 C.F.R. § 42.4(a), we have authority to determine whether to institute trial in a post-grant review. We institute a post-grant review only if the information presented in the petition filed under 35 U.S.C. § 321, if un rebutted, shows that it is more likely than not that at least one claim challenged in the petition is unpatentable. 35 U.S.C. § 324.

On the existing record, we conclude that Petitioner demonstrates it is more likely than not that Petitioner would prevail in showing that at least one challenged claim of the ’781 patent is unpatentable under a presented ground. *See generally* Pet. Therefore, we *grant* institution of post-grant review. Our reasoning is discussed below.

---

<sup>1</sup> Exhibit 1001, i.e., the challenged ’781 patent, was filed by Petitioner as a PDF document without electronically readable, searchable, and copyable text. This form creates a burden on the Board in analyzing and utilizing the evidence in this proceeding. The Board expects all evidence to be submitted by the parties in an electronically readable, searchable, and copyable form unless doing so is not possible—evidence not so-submitted may be refused. The parties are ordered to mitigate such issues in future filings.

A. STANDING

Petitioner states that it

certifies that: (1) the '781 patent is available for post grant review because its earliest claimed effective filing date is October 9, 2018, and the patent issued less than nine months ago, on December 3, 2024; and (2) Petitioner is not barred or estopped from requesting a post grant review on the grounds in this petition.

Pet. 5. This is sufficient. *See* 35 U.S.C. § 100(note)(A)–(B), § 321; 37 C.F.R. § 42.204(a). Patent Owner does not contest standing. *See generally* Prelim. Resp.

B. REAL PARTIES-IN-INTEREST

Petitioner states that “[t]he real parties-in-interest are Petitioner Straumann USA, LLC and its affiliates Institut Straumann AG and JJGC Indústria e Comércio de Materiais Dentários S.A.” Pet. 3. Patent Owner raises no objection and itself identifies “Smart Denture Conversions, LLC is the real party-in-interest.” Paper 4, 2; *see generally* Prelim. Resp.

C. RELATED MATTERS

Petitioner states:

Smart Denture Conversions, LLC (“Patent Owner”) sued Petitioner for alleged infringement of U.S. Patent No. 11,937,992 (“’992 patent”) on April 23, 2024. Ex. 1017. Patent Owner filed a supplemental complaint on February 4, 2025, adding allegations of infringement of the ’781 patent, which issued from a continuation of the ’992 patent. Ex. 1021. The litigation is captioned as *Smart Denture Conversions, LLC v. Straumann USA, LLC*, 1:24-cv-00507-JCB (D. Del.).

Petitioner filed a petition for inter partes review of claims 1–12 of the ’992 patent on April 30, 2025 (Case No. IPR2025-00956).

Pet. 3–4.

Patent Owner states:

Patent Owner is aware of the following judicial or administrative matters that would affect, or be affected by, a decision in this proceeding: *Smart Denture Conversions, LLC v. Straumann USA, LLC*, pending in the United States District Court for the District of Delaware, Case No.1:24-cv-00507-JCB. Also at issue in this matter is related U.S. Patent No. 11,937,992, and Petitioner Straumann USA, LLC has filed a petition for Inter Partes Review of this patent in Inter Partes Review Case IPR2025-00956.

U.S. Patent No. 12,156,781 is related to the following patent applications: U.S. Patent Application No. 18/827,656, filed September 6, 2024; U.S. Patent Application No. 18/829,490, issued on June 3, 2025 as U.S. Patent No. 12,318,266; U.S. Patent Application No. 18/328,730, issued on March 26, 2024 as U.S. Patent No. 11,937,992; U.S. Patent Application No. 17/691,108, issued on June 3, 2025 as U.S. Patent No. 12,318,265; and U.S. Patent Application No. 16/596,361, issued on April 26, 2022 as U.S. Patent No. 11,311,354.

Paper 4, 2.

#### D. THE '781 PATENT AND RELEVANT BACKGROUND

The '781 patent, titled "SCREW-ATTACHED PICK-UP DENTAL COPING SYSTEM AND METHODS," issued on December 3, 2024, from U.S. Application 18/424,696 ("the '696 application"), which was filed on January 26, 2024. Ex. 1001, codes (10), (21), (22), (45), (54).

The '781 patent indicates it relates generally to:

A temporary alignment system and method for holding a dental coping to an implant abutment using the same threads in the abutment that are used for definitive attachment are disclosed. The disclosed temporary fasteners initially orient and hold a coping against an abutment with a force along the same axis as the semi-definitive screw. The aligned coping can be picked-up in a closed-tray impression process without unscrewing the

temporary fastener. Embodiments include threaded posts that release copings from the abutment through axial forces. Some embodiments include a threaded post with separable cap that is picked-up with the coping. Methods for converting an existing prosthesis for screw attachment to implants in a single visit and digital capture of the converted prosthesis are described.

*Id.* at Abstr.

Parts of such a system are illustrated at, *inter alia*, Figures 5, 9, and 75, which are reproduced below—for clarity, we annotate these figures to label reference numbers with the corresponding elements as described in the Specification—Figure 5 is reproduced first:

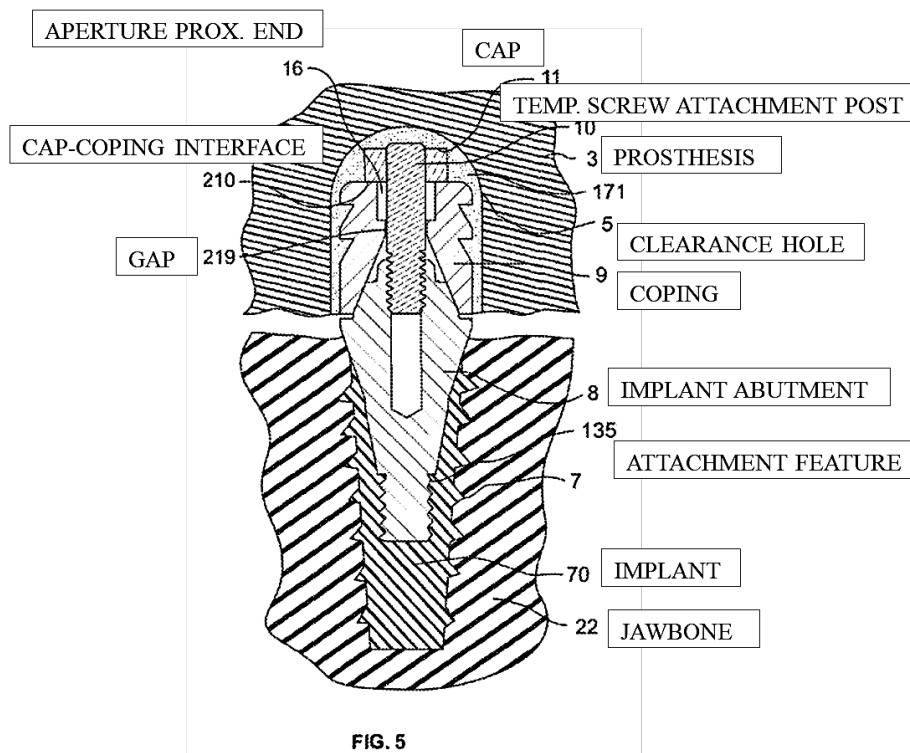


Figure 5 represents a step in a process also represented by Figures 3, 4, and 6–9, and illustrates “a side cross-sectional view of the embodiment of FIG. 4 attached to the jaw and prosthesis prior to the pick-up process.” Ex. 1001, 8:43–44. Figure 5 shows, in cross-section, jawbone 22 in which is

embedded implant 70, and there-into-which is embedded implant abutment 8 having attachment feature 135. *Id.* at 12:48–14:61. Above jawbone 22 is prosthesis 3 with clearance hole 5, inside of which is coping 9 and temporary screw having attachment post 10 and cap 11, which meets coping 9 at cap-coping interface 210; the temporary screw is partially inside implant abutment 8, and pick-up material 171 is provided inside clearance hole 5 between prosthesis 3 and coping 9. *Id.* “After the pick-up material 171 has set up, the prosthesis 3, coping 9 and temporary screw cap 10 are pulled off as an assembly off the patient’s jaw.” *Id.* at 14:61–63. “The post 10 is subsequently removed to make the abutment threads 18 available for holding the prosthesis in proper alignment with a definitive screw.” *Id.* at 14:67–15:2. Figure 9 is reproduced next:

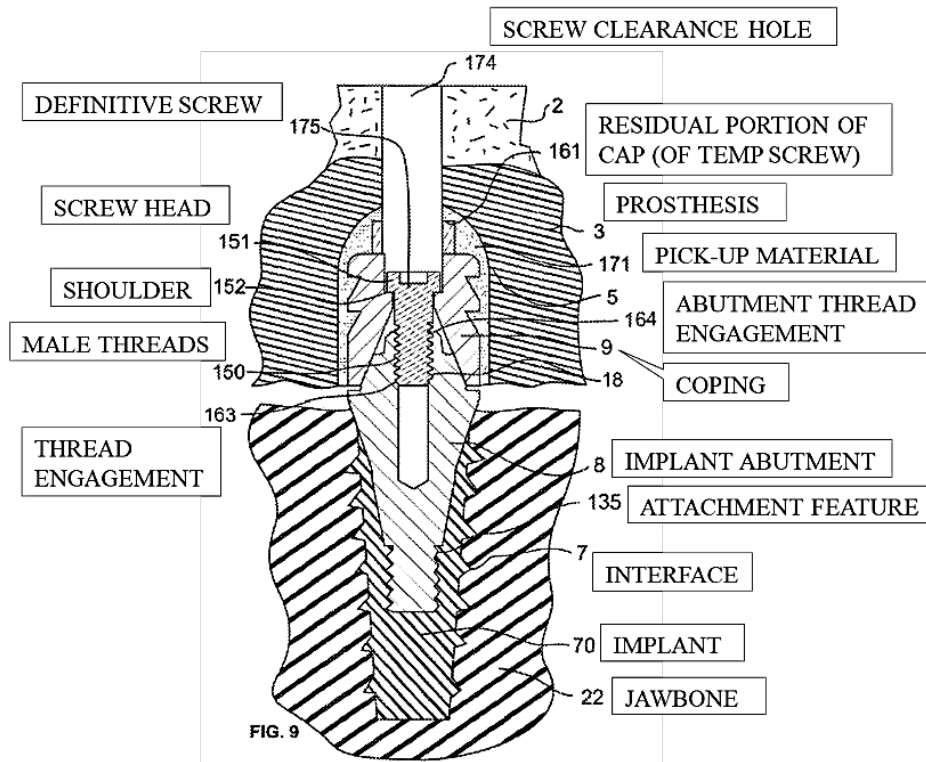
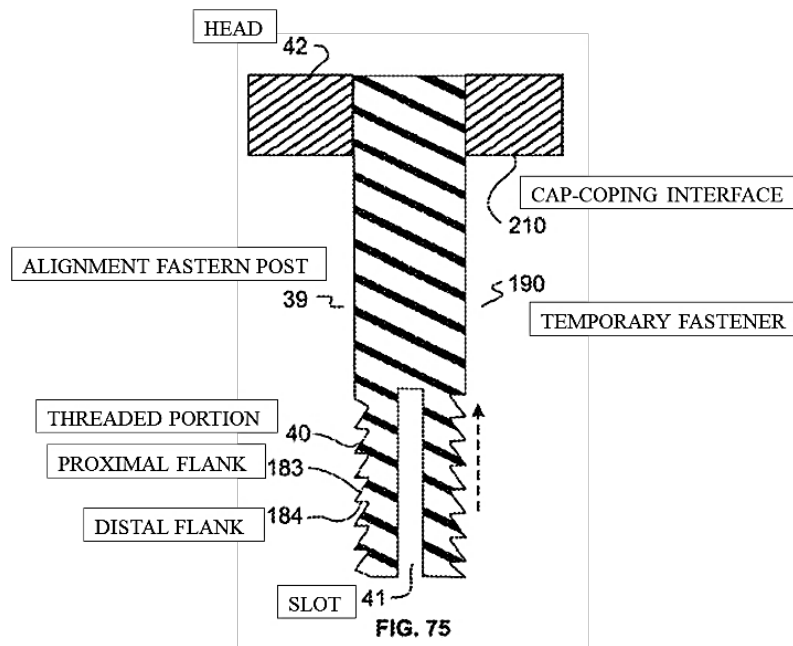


Figure 9 represents a subsequent step in the same process and shows a “side cross-sectional view of the embodiment of FIG. 8 showing the definitive screw holding the prosthesis to the implant.” Ex. 1001, 8:54–56. Figure 9, in addition to showing elements also shown in Figure 5 above, shows temporary screw replaced by definitive screw 175, which is provided in screw clearance hole 174 in prosthesis 3 and residual portion of cap 161 of the temporary screw. *Id.* at 15:29–54. Definitive screw 175 has male threads 150 filling female threads of abutment 8 at thread engagement 163 and abutment thread engagement 164. *Id.* Definitive screw 175 has head 151, which is shown abutting shoulder 152 of coping 9. *Id.* Figure 75 is reproduced next:



Several embodiments of temporary screws are disclosed in the '781 patent, and Figure 75 “is a cross-sectional view of a temporary screw embodiment incorporating a split post that has deflecting sections with screw threads shaped to facilitate axial separation without unscrewing the post threads.”

Ex. 1001, 11:31–34. Figure 75 shows temporary fastener 190 with alignment fastener post 39, threaded portion 40, and head 42. *Id.* at 23:10–41. Threaded portion 40 has slot 41 and asymmetric threads with proximal flank 183 and distal flank 184. *Id.* “[A]s shown in FIG. 75 an alignment fastener post 39 may contain a separable threaded or serrated portion 40 that engages the screw threads in the abutment for pick-up, but that will release with axial force after.” *Id.* at 23:17–21. Further,

FIG. 75 shows a temporary fastener 190 with a head 42 portion and an attachment post portion 39. The attachment post portion 39 is shown as having a slot 41 and asymmetric threads or serrations 40 that have proximal flank 183 and a distal flank 184. This asymmetric threading still allows the temporary attachment post portion 39 to be inserted through rotation like other temporary screw embodiments for alignment for coping pick-up. The post 39 may be subsequently extracted with a separation force in the axial direction. Although the threads could be designed to provide engagement with the implant abutment threads through axial motion in the opposite direction to the arrow shown in FIG. 75, rotation to a design torque on engagement is generally preferred.

*Id.* at 23:21–34.

The ’781 patent concludes with sixteen claims, of which claims 1, 6, 8, and 10 are independent claims. *Id.* at 25:45–29:2 (claims). These independent claims are reproduced below:

1. A dental system comprising:
  - an implant abutment having threads;
  - a definitive screw having an axis with a length measured along the axis and a width measured perpendicular to the axis, the definitive screw having a proximal head end having a tool interface and a distal post portion having threads configured to engage the threads of the implant abutment;

a coping having a proximal end with an aperture, wherein the aperture is larger than the distal post portion of the definitive screw and smaller than the proximal head end of the definitive screw; and

a temporary screw having an axis with a length measured along the axis and a width measured perpendicular to the axis, the temporary screw comprising:

a proximal head portion with a width larger than the aperture of the coping; and

a distal shaft portion with threads in a pattern that is shaped differently from a pattern of the threads of the definitive screw,

wherein the temporary screw is rotatable in a distal direction whereby the distal shaft portion of the temporary screw engages the threads of the implant abutment to a predetermined torque which causes the proximal head portion of the temporary screw to hold the coping in alignment with the implant abutment, and wherein an axial force in a proximal direction from pick-up processing releases the coping and the temporary screw from the implant abutment.

\* \* \*

6. A dental system comprising:

a coping having a proximal end with an aperture; and  
an implant abutment having threads;

a definitive screw having a proximal head end having a tool interface and a distal post portion having threads for securing the coping to the threads of the implant abutment after processing, wherein the distal post portion having threads is sized to extend through the aperture of the coping; and

a temporary fastener having an axis with a length measured along the axis and a lateral dimension providing different widths along the axis measured perpendicular to the axis, the temporary fastener comprising:

a proximal portion with a width larger than the coping aperture; and

a shaft comprising a distal shaft portion sized and configured for rotary engagement with the implant abutment threads,

wherein the shaft of the temporary fastener is sized and configured to extend through the aperture of the coping and the distal shaft portion to engage the implant abutment threads with an engagement depth at a predetermined torque and is configured to cause the proximal portion of the temporary fastener to hold the coping into alignment with the implant abutment,

wherein the temporary fastener is configured to release at least a portion of the temporary fastener and the coping from the implant abutment as a unit in response to an axial release force that is applied only in a proximal direction to the temporary fastener whereby the axial release force is applied without rotation of the temporary fastener, and

wherein the distal shaft portion is sized and configured so that it does not engage the implant abutment threads continuously between a most distal position of the distal shaft portion and a proximal end of the implant abutment threads.

\* \* \*

8. A dental system comprising:

a coping having a proximal end with an aperture; and  
an implant abutment having threads;

a definitive screw having a proximal head end having a tool interface and a distal post portion having threads for securing the coping to the threads of the implant abutment, wherein the distal post portion having threads is sized to extend through the aperture of the coping; and

a temporary fastener having an axis with a length measured along the axis and a lateral dimension providing different widths along the axis measured perpendicular to the axis, the temporary fastener comprising:

a proximal portion with a width larger than the coping aperture; and

a shaft comprising a distal shaft portion sized and configured for rotary engagement with the implant abutment threads prior to attachment of the definitive screw,

wherein the shaft of the temporary fastener extends through the aperture of the coping and the distal shaft portion engages the implant abutment threads with an engagement depth at a predetermined torque and is configured to cause the proximal portion of the temporary fastener to hold the coping into alignment with the implant abutment,

wherein the temporary fastener is configured to release at least a portion of the temporary fastener and the coping from the implant abutment as a unit when an axial release force is applied in a proximal direction to the temporary fastener,

wherein the distal shaft portion is sized and configured so that it does not engage the implant abutment threads continuously between a most distal position of the distal shaft portion and a proximal end of the implant abutment threads,

wherein a volume of definitive screw post material of the distal post portion of the definitive screw that is located distally of the proximal end of the implant abutment threads when in position to hold the against the implant abutment is greater than a volume of temporary fastener shaft material of the distal shaft portion of the temporary fastener that is located distally of the proximal end of the implant abutment threads when in position to hold the coping against the implant abutment.

\* \* \*

10. A dental system comprising:

an implant abutment having threads having an implant abutment threads contour and an implant abutment longitudinal axis;

a coping having a proximal end with a central aperture,  
and

a temporary fastener having a longitudinal axis with a length measured along the longitudinal axis and a width

dimension measured perpendicular to the longitudinal axis, the temporary fastener comprising:

a head with a proximal end having a drive tool interface sized and configured for rotating the temporary fastener to a predetermined torque, wherein the head resides external to the central aperture of the coping, and

a shaft coupled to or integral with the head that extends through the central aperture of the coping, the shaft comprising:

a distal portion having an outer surface comprising shaft threading having a shaft threading contour, wherein the shaft threading contour does not essentially match the implant abutment threads contour, and

a proximal portion with an outer surface devoid of shaft threading,

wherein, the temporary fastener is configured so that when the distal portion of the shaft extends through the central aperture of the coping and engages the threads of the implant abutment at a predetermined torque, the shaft threading engages the threads of the implant abutment whereby the shaft threading cooperates with the threads of the implant abutment and is sized and configured to pull the coping into position with the implant abutment,

wherein the temporary fastener is configured so that in response to application of an axial release force above a predetermined value in a proximal direction, the coping and the temporary fastener are released as a unit from the implant abutment, and

wherein the axial force above the predetermined value in the proximal direction is configured to be applied in a pick-up process after the coping is adhesively bonded to a prosthesis or in a closed tray impression process.

*Id.*

E. PETITIONER’S ASSERTED GROUNDS FOR UNPATENTABILITY

Petitioner asserts the following grounds for unpatentability:

Ground	Claims Challenged	35 U.S.C. §	Reference(s)/Basis
1	6, 10–16	112(b)	Indefiniteness
2	1–16	112(a)	Written Description and Enablement
3	10, 12, 15, 16	103	Bernhard, <sup>2</sup> Poovey, <sup>3</sup> Gracco <sup>4</sup>
4	1–9, 11, 13, 14	103	Bernhard, Poovey, Gracco, Derey <sup>5</sup>

Pet. 5–6. In support of these grounds for unpatentability, Petitioner submits, *inter alia*, the Declaration of John B. Brunski, PhD. Ex. 1002. In support of its positions at this stage of the proceeding, Patent Owner submits, *inter alia*, the Declaration of Karl R. Leinsing, MSME, PE. Ex. 2010. The qualifications of these witnesses to testify as to the subject matter of their declarations stand uncontested, on this record.

II. DISCUSSION AND ANALYSIS

A. LEGAL STANDARDS

“In [a post-grant review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3), but also applicable to § 322(a)(3) (requiring

---

<sup>2</sup> US 2017/0202649 A1, pub. July 20, 2017. Ex. 1003 (“Bernhard”).

<sup>3</sup> US 2016/0045290 A1, pub. Feb. 18, 2016. Ex. 1005 (“Poovey”).

<sup>4</sup> Gracco et al., *Effects of thread shape on the pullout strength of Miniscrews*, 142(2) AM. J. ORTHOD. & DENTOFACIAL ORTHOP. 186–90 (2012). Ex. 1006 (“Gracco”).

<sup>5</sup> WO 2013/030839 A1, pub. Mar. 7, 2013. Ex. 1008 (“Derey”).

AIA petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in AIA proceedings).<sup>6</sup>

A post-grant review may be instituted if the information presented by a petitioner in the petition, if not rebutted, shows that it is more likely than not that the petitioner would prevail with respect to at least one of the claims challenged in the petition. 35 U.S.C. § 324.

*Written Description and Enablement Requirements*

35 U.S.C. § 112(a) states, *inter alia*:

IN GENERAL.—The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same.

*Id.* Our reviewing court has established that “§ 112[a] contains two separate description requirements: a ‘written description [i] of the invention, and [ii] of the manner and process of making and using [the invention].’” *Ariad Pharms, Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1344, 1351 (Fed. Cir. 2010) (en banc).

“The ‘written description’ requirement serves a teaching function, as a ‘*quid pro quo*’ in which the public is given ‘meaningful disclosure in exchange for being excluded from practicing the invention for a limited

---

<sup>6</sup> At times, we may refer to Patent Owner’s arguments as unpersuasive; however, this is in the context of the record as a whole. We do not shift the ultimate burden from Petitioner.

period of time.” *Univ. of Rochester v. G.D. Searle & Co., Inc.*, 358 F.3d 916, 922 (Fed. Cir. 2004) (quoting *Enzo Biochem, Inc. v. Gen-Probe Inc.*, 323 F.3d 956, 970 (Fed. Cir. 2002)). “[A] sufficient description of a genus . . . requires the disclosure of either a representative number of species falling within the scope of the genus or structural features common to the members of the genus so that one of skill in the art can ‘visualize or recognize’ the members of the genus.” *Ariad*, 598 F.3d at 1350 (citing *Regents Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 1568–69 (Fed. Cir. 1997)).

Regarding the enablement requirement, our reviewing court has held:

Enablement “is a legal determination of whether a patent enables one skilled in the art to make and use the claimed invention.” *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384 (Fed. Cir. 1986) (citation omitted). To be enabling, a patent’s specification must “teach those skilled in the art how to make and use the full scope of the claimed invention without ‘undue experimentation.’” *ALZA Corp. v. Andrx Pharm., LLC*, 603 F.3d 935, 940 (Fed. Cir. 2010) (citations omitted). It is well-established, however, that a specification need not disclose what is well-known in the art. *See Hybritech*, 802 F.2d at 1384 (“[A] patent need not teach, and preferably omits, what is well known in the art.”). It is true, however, that, “the rule that a specification need not disclose what is well known in the art is merely a rule of supplementation, not a substitute for a basic enabling disclosure.” *ALZA*, 603 F.3d at 940–41 (quoting *Auto. Techs. Int’l, Inc. v. BMW of N. Am., Inc.*, 501 F.3d 1274, 1282 (Fed. Cir. 2007)).

*Steck, Inc. v. Res. & Diagnostic Sys., Inc.*, 665 F.3d 1269, 1288 (Fed. Cir. 2012). “If a patent claims an entire class of processes, machines, manufactures, or compositions of matter, the patent’s specification must

enable a person skilled in the art to make and use the entire class.” *Amgen Inc. v. Sanofi*, 598 U.S. 594, 610 (2023).

*Definiteness Requirement*

35 U.S.C. § 112(b) states: “CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.” *Id.*

Under this section of the Patent Act, “a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 989, 901 (2014). “A claim term, even if it refers to certain objective measures, is indefinite if it ‘might mean several different things [but] no informed and confident choice is available among the contending definitions.’” *Akamai Tech., Inc. v. MediaPointe, Inc.*, No. 2024-1571, 2025 WL 3274871, \*6 (Fed. Cir. Nov. 25, 2025) (quoting *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014)). “The fact that [a patent owner] can articulate a definition [of a disputed claim term] supported by the specification, however, does not end the inquiry. Even if a claim term’s definition can be reduced to words, the claim is still indefinite if a person of ordinary skill in the art cannot translate the definition into meaningfully precise claim scope.” *Halliburton Energy Serv., Inc. v. M-I LLC*, 514 F.3d 1244, 1251 (Fed. Cir. 2008).

“While patentees are allowed to claim their inventions broadly, they must do so in a way that distinctly identifies the boundaries of their claims.” *Id.* at 1253. And, although “‘there is nothing intrinsically wrong with’ using

functional language in claims, . . . in some instances, use of functional language can fail ‘to provide a clear-cut indication of the scope of subject matter embraced by the claim’ and thus can be indefinite.” *Id.* at 1255 (quoting *In re Swinehart*, 439 F.2d 210, 212–13 (CCPA 1971)).

#### *Non-Obviousness Requirement*

The Supreme Court, in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), reaffirmed the framework for determining obviousness set forth in *Graham v. John Deere Co.*, 383 U.S. 1 (1966). The *KSR* Court summarized the four factual inquiries set forth in *Graham* (383 U.S. at 17–18) that are applied in determining whether a claim is unpatentable as obvious under 35 U.S.C. § 103(a) as follows: (1) determine the scope and content of the prior art; (2) ascertain the differences between the prior art and the claims at issue; (3) resolve the level of ordinary skill in the art;<sup>7</sup> and (4) consider objective evidence indicating obviousness or non-obviousness. *KSR*, 550 U.S. at 406.

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

#### B. ORDINARY SKILL IN THE ART

Petitioner contends:

A person of ordinary skill in the art (POSA), as of the earliest claimed effective filing date of October 9, 2018, would have at

---

<sup>7</sup> See *infra* Section II.B.

least a bachelor's degree in mechanical engineering, biomedical engineering, materials science engineering, or an equivalent degree, plus at least five years of experience working with (researching, developing and/or designing) dental implants and prostheses, including familiarity and experience with fasteners (threaded and otherwise) used to connect prostheses, implants and related components. A POSA could also have less formal education but commensurately more practical experience, or vice versa. *Id.*, ¶¶126–129.

Pet. 31 (citing Ex. 1002).

Patent Owner states:

For purposes of this preliminary response, Patent Owner asserts that a POSA would be an individual having a bachelor's degree in mechanical engineering or equivalent technical degree with at least three years of experience in the field, such as experience with the design of bone implants, anchors, and/or screws. Leinsing Decl. ¶ 37. A person with a higher technical engineering degree and two years of experience in a related field would also qualify as a POSA. A POSA with such qualifications may consult with a dentist, oral surgeon, prosthodontist, or periodontist who has experience with dental implants and prosthetics on patients. Leinsing Decl. ¶ 37.

Patent Owner maintains that Petitioner's arguments fail under both proposed POSA definitions. Patent Owner reserves the right to dispute Petitioner's definition if the Board institutes a PGR.

Prelim. Resp. 21 (citing Ex. 2010).

These two proposed definitions of the ordinarily skilled artisan share many consistencies, for example, the types of degrees and experience such a person would have had, but differ in the number of years of experience. Petitioner proposes the ordinarily skilled artisan would have had *at least five years* of experience and Patent Owner proposes *at least three years* (which would necessarily include five years, too). Patent Owner also proposes that

the ordinarily skilled artisan would have *consulted* a dentist, oral surgeon, prosthodontist, or periodontist with experience in dental implants and prosthetics.

At this point, we find little meaningful difference between the two proposed definitions. In fact, neither does Patent Owner’s witness, Mr. Leinsing, who states that his “opinions would not change under either definition.” Ex. 2011 ¶ 42. And, as set forth above, Patent Owner asserts that, for the sake of its present arguments, it matters not which of the two proposed definitions we use for this proceeding. Prelim. Resp. 21.

Thus, at this stage, we accept and use Petitioner’s proposed definition of the ordinarily skilled artisan, which, unlike Patent Owner’s, does not implicate reliance on the knowledge of people other than the individual ordinarily skilled artisan. Petitioner’s definition appears to comport with the level of skill in the art reflected in the prior art of record and the ’781 patent. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (“[T]he prior art itself [may] reflect[] an appropriate level” of ordinary skill in the art) (quoting *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 163 (Fed. Cir. 1985)). This issue may be further developed at trial by the parties, if desired.

#### C. CLAIM CONSTRUCTION

The Board interprets claim terms in a post-grant review using the same claim construction standard that is used to construe patent claims in a civil action in federal district court thus, by default, we give claim terms their ordinary and customary meaning, which is “the meaning that the term would have to a person of ordinary skill in the art in question at the time of

the invention.” 37 C.F.R. § 42.200(b); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc).

Petitioner indicates that

None of the claim terms of claims 1–16 need to be construed to determine the patentability issues presented in this petition. The petition applies the ordinary meaning of the claim language as it would be understood by a POSA after reading the ’781 patent. Ex. 1002, ¶130. Petitioner will propose a construction if Patent Owner argues or the Board determines that one is required for any term.

Pet. 31 (citing Ex. 1002). And, Patent Owner presents no express position on claim construction at this point. *See generally* Prelim. Resp.

At this stage of the proceeding, we do not expressly construe any claim terms; however, this position is preliminary and we may change it based on the fully developed record at trial.<sup>8</sup>

#### D. PETITIONER’S ASSERTED PRIOR ART

We review and summarize Petitioner’s asserted prior art references below. Petitioner asserts that each of Bernhard, Poovey, Gracco, and Derey is prior art. Pet. 31. Patent Owner does not dispute that any asserted reference is prior art. *See generally* Prelim. Resp. These references are pertinent to Petitioner’s Grounds 3 and 4.

##### 1. Bernhard (Ex. 1003)

Bernhard (US 2017/0202649 A1), titled “PROVISIONAL PROSTHETIC SYSTEMS AND METHODS OF USING SAME,” is the

---

<sup>8</sup> If either party intends to argue claim construction at trial, they must do so in a clearly designated section of their briefing and expressly identify such arguments. Claim construction arguments should not be relegated to patentability arguments on the facts.

July 20, 2017, publication of U.S. Application 15/328,867, which was filed under the PCT on July 24, 2015. Ex. 1003, codes (21), (22), (43), (54).

Bernhard discloses its invention relates to the following:

Provisional prosthetic systems and methods of coupling such provisional prosthetic systems to a dental implant are disclosed. The provisional prosthetic system can include at least one dental component having a provisional connection feature and a prosthesis. A clinician can couple the prosthesis to the dental component using a bonding agent. The clinician can then drill a hole through the prosthesis. The hole can be configured to receive a fastener to securely fasten the prosthesis and dental component to the implant.

*Id.* at Abstr.

Bernhard discloses a dental system for a prosthetic that includes an abutment implanted into a patient's jaw, a coping over that abutment and held thereto provisionally via a snap-fit connection, which can be separated by a separation force in a direction away from the abutment, but may also be held by a screw. *Id.* ¶¶ 66, 76, 82, 105, 126, 130, 135, Figs. 1, 8, 12. A “snap-fit” connection between an abutment and coping “advantageously allow[s] the abutment 120 and the other dental component (e.g., coping 130) to be easily removed via application of a separation force,” which “can facilitate preparation of the provisional prosthesis system 100 for final installation to the patient's jaw.” *Id.* ¶ 75. Bernhard states, “other shapes, sizes, and elements for the provisional connection feature 1406 can be used.” *Id.* ¶ 156.

Bernhard illustrates an exemplary dental prosthesis system at Figure 8, reproduced below:

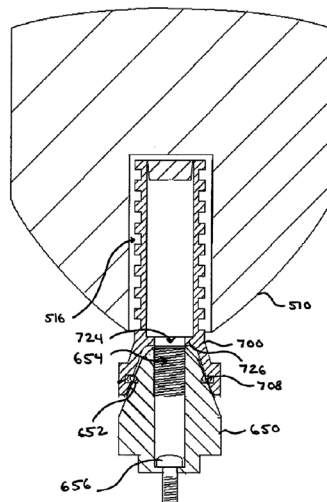


Figure 8

According to Bernhard, “FIG. 8 illustrates a cross-sectional view of the prosthesis of FIG. 5, the abutment of FIG. 6, and the coping of FIG. 7,” the components being arranged together in a provisional system during a step in attaching a prosthetic system. *Id.* ¶ 27. Figure 8 shows provisional prosthesis 510 with bore 516 and coupling screw 656; abutment 650 with threading (not numbered) in a bore 654, an annular slot 652, and a proximal portion 654; coping 700 with distal portion 702 (not labeled), cavity 704 (not labeled) shaped to fit the abutment 650, spring element 708 between abutment 650 and coping 700, bore 720 (not labeled), elongate member 714 (not labeled), aperture 724, and rim 726. *Id.* ¶¶ 122–130. Bernhard states that bore 654 can be threaded internally (as shown) or include a connection feature, and bore 720 is sized and shaped to allow a fastener to pass therethrough. *Id.* ¶¶ 129–130.

Bernhard illustrates the same dental prosthesis system at a subsequent step of implantation processing at Figure 12, reproduced below:

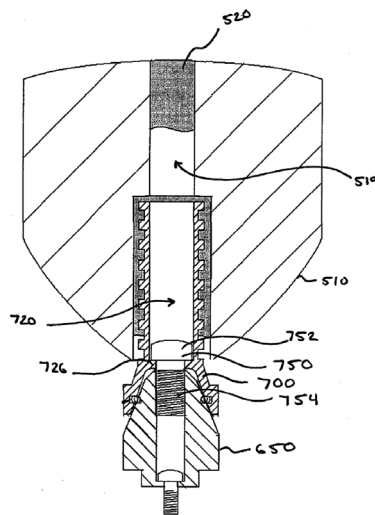


Figure 12

According to Bernhard, “Fig. 12 illustrates a cross-sectional view of the apparatus of FIG. 9 attached with a fastener,” where Figure 9 shows the apparatus shown at a previous step at Figure 8. *Id.* ¶¶ 28, 31. Figure 12 shows the same elements discussed above in relation to Figure 8, but further shows fastener 750 inserted into bore 519 of prosthesis 510 and bore 720 of coping 700, where fastener’s head 752 seats on rim 726 of coping 700 and fastener’s shaft 754 inserts through aperture 724 of coping 700 into bore 654 of abutment 650, threaded into the treading of bore 654. *Id.* ¶ 134.

Bernhard states, in referring to a more generic dental prosthetic system, that

In some embodiments, the coping 130 can include additional connection features to reduce the likelihood of inadvertent detachment of the coping 130 from the abutment 120. For example, in some embodiments, the coping 130 and the abutment 120 can be attached using a separate fastener such as a prosthetic screw 138. The prosthetic screw 138 can pass through a bore 139 of the coping 130 and positively engage a connection feature of the abutment 120, such as threaded bore

128, or of the coupling screw 16 thereby securely attaching the coping 130 to the abutment 120. This can advantageously further reduce the likelihood of inadvertent detachment of the coping 130 from the abutment.

*Id.* ¶ 82.

2. Poovey (Ex. 1005)

Poovey (US 2016/0045290 A1), titled “DENTAL IMPLANT SYSTEM COMPRISING MEANS FOR PREVENTING ROTATION OF THE SUPERSTRUCTURES AND METHODS OF FORMING AND INSTALLING,” is the February 18, 2016, publication of U.S. Application 14/778,930, which was filed under the PCT on March 21, 2014. Ex. 1005, codes (21), (22), (43), (54).

Poovey discloses its invention relates to the following:

Dental implants for fixed and removable prosthetic devices, having application to single tooth replacement, e.g., caps and crowns, and multiple tooth replacement using one or more implants, e.g., bridges, and multiple implants for full and partial prosthetic devices. Dental implants comprise a non-cylindrical implant and an abutment configured to mate with the implant in a non-rotatable fashion. Further, dental reconstruction and abutment installation methods utilizing the dental implant systems and instruments are disclosed. Also provided are impression taking procedures, and impression copings that produce an accurate fit between the dental prosthesis and the dental implant.

*Id.* at Abstr.

Poovey discloses temporary screws used during the process of installing dental implants that can have flexible or heat labile threads, or coatings, which can be threaded into an implant to secure coping and then pulled out of the implant without unscrewing and without much force (along with coping) for removal, which improves accuracy of the related

impression for the permanent prosthesis, is easier for the dentist to work with, and more comfortable for the patient. *See id.* ¶¶ 21–23, 40, 66–70, 79, 81–84, Fig. 13.

3. Gracco (Ex. 1006)

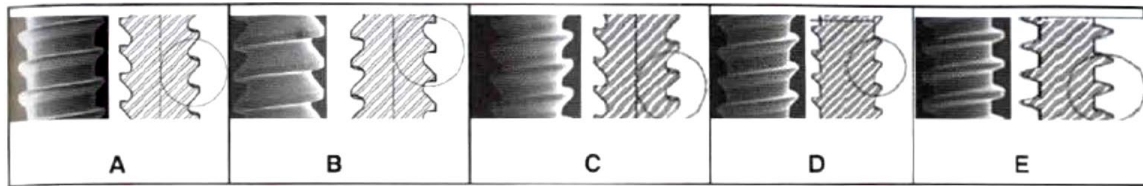
Gracco is an article published in 2012 in the American Journal of Orthodontics & Dentofacial Orthopedics, titled “Effects of thread shape on the pullout strength of miniscrews.” Ex. 1006, 186 (we cite to the original pagination of the reference).

Gracco discloses a study, which it summarizes as follows:

**Introduction:** The aim of this study was to determine the effects of variations in thread shape on the axial pullout strength of orthodontic miniscrews. **Methods:** A total of 35 miniscrews, 7 of each design being considered, were tested by performing pullout tests on a synthetic bone support. We used self-tapping and self-drilling miniscrews having a diameter of 2 mm and a thread shaft length of 12 mm (the longest and the largest supplied by the manufacturer). A buttress reverse thread shape served as the control design and was tested against 4 experimental designs, each manufactured with a modification in thread shape while maintaining all other characteristics. The experimental groups had the following thread designs: buttress, 75° joint profile, rounded, and trapezoidal. **Results:** The control group with a buttress reverse thread shape had consistently higher pullout strength values than did the other designs. A statistically significant reduction in pullout force was found between the buttress reverse and the buttress thread miniscrews. **Conclusions:** Thread design influenced the resistance to pullout of the orthodontic miniscrews. The buttress reverse thread shape provided the greatest pullout strength.

*Id.* at Abstr.

Gracco discloses, at Figure 1 reproduced below, the following types of dental miniscrew threads:



**Fig 1.** Schematic illustrations of miniscrew thread-designs: **A**, butress reverse thread shape (control); **B**, butress thread; **C**, 75° joint profile thread; **D**, rounded thread; **E**, trapezoidal thread.

*Id.* at 187. Gracco’s Figure 1 shows five types of dental miniscrew threads, including “A” butress reverse thread with threads inclined away from the screw’s tip, and also:

- (1) butress thread, opposite to the butress reverse, with thread peaks inclined toward the miniscrew tip (Fig 1, B);
- (2) 75° joint profile thread, with the threads joining the shaft at an angle of 75° (Fig 1, C);
- (3) rounded thread, with the thread peaks rounded (Fig 1, D);
- and (4) trapezoidal thread, with the thread profile trapezoidal (Fig 1, E).

*Id.*

Gracco discloses “that thread shape affects the miniscrew’s mechanical stability” and “[a] significant reduction in pullout force was found between the butress reverse and the butress thread miniscrews. This result could be explained by the geometry of the thread that was inclined toward the tip, thus reducing the resistance to removal in an axial direction.”

*Id.* at 189.

4. Dery (Ex. 1008)

Dery (WO 2013/030839 A1), titled “A METHOD FOR ATTACHING AND DETACHING DENTAL CONSTRUCTIONS AND A DEVICE THEREOF,” is the March 7, 2013, publication of PCT Application PCT/IL2012/050339, which was filed on August 30, 2012. Ex. 1008, codes (10), (21), (22), (43), (54).

Derey discloses that its invention relates to the following:

The present invention relates to a flexible holding device for connecting a construction to an implant in a ridge of a mouth comprising: (a) a head for holding the construction from the inside of said construction; (b) more than one leg for holding the internal thread of said implant from the inside; and (c) a body, attached to said head and attached to said legs, for attaching said construction to said implant.

*Id.* at Abstr. Derey illustrates such a flexible holding device at its Figure 6, which is reproduced below:

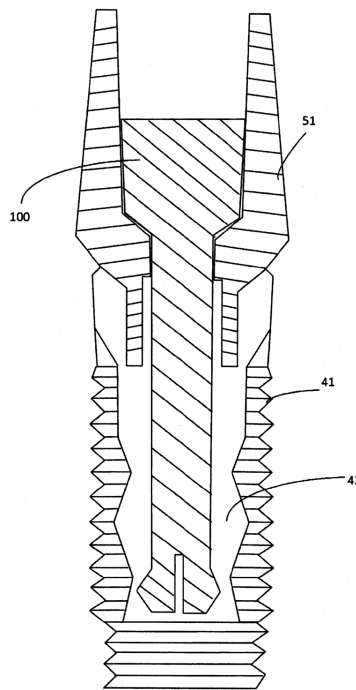


Fig. 6

Derey states that “Fig. 6 is a schematic diagram of the flexible holding device attaching a construction to a typical dental implant analogue” and Figure 6 shows construction 51 held to implant 41 via device 100, which has legs (not labeled, but shown as element 13 in Figure 5) separated by a slot (not labeled) and portions extending from the legs that grip an internal thread 42 of implant 41. *Id.* at 5, 10. Derey states that, “if an upper pulling

force is applied to the construction 51, the legs of device 100 will surrender their grip and the construction 51 can be easily detached from the implant 41.” *Id.* at 10.

Derey states that

The device of the present invention is beneficial to the dental surgeon who performs the implant surgery, the dental laboratory which creates the dentures, and the patient who receives the denture. The dental surgeon can make an impression much easier since the construction is removed from the ridge along with the impression.

*Id.* at 10.

E. ASSERTED OBVIOUSNESS OF CLAIMS 10, 12, 15, AND 16 OVER BERNHARD, POOVEY, AND GRACCO (GROUND 3)

We first address Petitioner’s Ground 3, which asserts certain claims would have been obvious over the above-discussed prior art.

Petitioner asserts that claims 10, 12, 15, and 16 would have been obvious over Bernhard, Poovey, and Gracco and, therefore, are unpatentable. Pet. 63–83 (citing Ex. 1002 ¶¶ 210–271; Ex. 1003 ¶¶ 13, 66–67, 76, 82, 105, 122, 126, 128–131, 134, 149, 158, 176, Figs. 3, 7A, 8, 9, 12; Ex. 1005 ¶¶ 84, Fig. 13; Ex. 1006, 187, 189, Fig. 1; Ex. 1015, 298).

Patent Owner contests this. Prelim. Resp. 47–49 (citing Ex. 1005, 12; Ex. 2010 ¶¶ 168–169).

1. Petitioner’s Positions

Petitioner asserts that the ordinarily skilled artisan would have had reason to combine Bernhard, Poovey, and Gracco (*see* Pet. 64–72), and asserts that

it would have been obvious in view of Bernhard, Poovey and Gracco to modify the system of Figures 8–12 of Bernhard to temporarily connect coping 700 to abutment 650 with a

temporary fastener with flexible threads in a buttress thread pattern, which would be threaded into bore 654 but pulled out of abutment 650 without being unscrewed when the prosthesis is removed. Ex. 1002, ¶214.

Pet. 65. Petitioner asserts that the reason for the combination and modification would have been to make the system “more secure, reliable and stable,” but still allow the temporary screw and coping to conveniently be pulled off rather than unscrewed, per the teaching and suggestion of Bernhard and Poovey that a releasable screw holding a coping to an abutment provides these advantages. *Id.* at 65–67 (citing, *inter alia*, Ex. 1003 ¶ 82; Ex. 1005 ¶ 84).

Petitioner also maps the limitations and elements of independent claim 10 and dependent claims 12, 15, and 16 to the disclosures and teachings of Bernhard, Poovey, and Gracco. *Id.* at 72–83 (citing, *inter alia*, Exs. 1003, 1005, and 1006, variously). Petitioner identifies that Bernhard teaches a dental system having most of the same components as claimed and used in a similar way as the claimed invention, i.e., it provides an internally threaded implant abutment, coping, and a definitive screw (with threads), and suggests advantages for using a temporary screw with threads (to engage the abutment’s threads). *Id.* Petitioner identifies that such a temporary screw used in a similar dental system is taught by Poovey and that Bernhard’s system would have been modified to utilize such a temporary screw, that Poovey teaches a screw-in/pull-out temporary screw with flexible threads, and that it would have been obvious to modify such threads per Gracco’s teachings to be asymmetrical buttress style threads, i.e., threads shaped quite differently from Bernhard’s permanent, definitive screw’s threads and those of the abutment to which the definitive screw is designed

to permanently mate, to enhance the pull-out functionality of the temporary screws. *Id.*

On this record, we find no gaps in Petitioner’s identification of each claim limitation in the combination of Bernhard, Poovey, and Gracco. And, Petitioner has identified a reason with rational underpinning why the ordinarily skilled artisan would have combined this prior art with a reasonable expectation of success.

## 2. Patent Owner’s Positions

Patent Owner argues there would not have been motivation for and a reasonable expectation of success in combining Bernhard, Poovey, and Gracco. Prelim. Resp. 47–49 (citing Ex. 1005, 12; Ex. 2010 ¶¶ 168–169).

Patent Owner argues that the ordinarily skilled artisan would not have had a reasonable expectation of success because it would be impractical to use Poovey’s small screws composed of or coated with plastic or silicone for dental implants because such material would impede their insertion. *Id.* Patent Owner also asserts that adding heat to allow screw removal, as taught by Poovey, would be unworkable in a clinical setting and “perhaps even painful for the patient.” *Id.* at 48–49.

Patent Owner’s witness, Mr. Leinsing, testifies that the Poovey screw coating may prevent the screws from being inserted because silicone is not rigid enough to easily fit into female threading, comparing the coating to “a gummy worm.” Ex. 2010 ¶ 167. And, Mr. Leinsing testifies that “[a]pplying enough heat to sufficiently degrade or dissolve the thread material or coating *through the prosthesis, coping, and/or implant abutment* is likely to be inefficient and perhaps even painful for the patient.” *Id.* ¶ 168.

Patent Owner also, generally, argues that objective indicia of non-obviousness support the claims' patentability. Prelim. Resp. 50–55. Patent Owner suggests that, but does not clearly argue or support with evidence, commercial success, long-felt and unmet need, unexpected results, praise, and skepticism supports patentability. *Id.*

At this point and on this preliminary record, we are not persuaded by Patent Owner's arguments.

First, Patent Owner's arguments do not account for Petitioner's proposed combination of prior art where the threads of Poovey's temporary screw would not only be potentially coated with or made of some flexible material, but would also be engineered per Gracco's teachings. "Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references. . . . [References] must be read, not in isolation, but for what [they] fairly teach[ ] in combination with the prior art as a whole." *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

Also, Petitioner does not assert that the temporary screw threads must be *made of silicone*, hence akin to a gummy worm as suggested by Mr. Leinsing, but may be *coated* therewith to provide flexibility, or the threads may simply be made of some flexible material. *See* Pet. 65, 69, 71, 77, 81; *see also* Ex. 1005 ¶ 84 ("By using a screw that is metal with flexible or heat labile plastic threads that are large enough to be screwed into the implant, but are able to be pulled out without much force."). Thus, it is not clear on this record that such a screw, coated or not, regardless of size, could not be practically used in a dental system as taught by Bernhard and Poovey.

As to the argued impracticality of heating temporary screws in a patient's mouth for removal, this is one way Poovey teaches providing flexibility for screw threads. However, Poovey also teaches or suggests that the threads of the temporary screw are simply "flexible," which, on this record, does not appear to require heating for removal. *See, e.g.*, Ex. 1005 ¶ 84 ("[U]sing a screw that is metal with *flexible or heat labile plastic* threads that are large enough to be screwed into the implant, but are able to be pulled out without much force." (emphasis added)).

Finally, regarding objective indicia of non-obviousness, Patent Owner has not established a nexus between its asserted indicia and the claimed invention. And, at this point, there is no persuasive evidence of record supporting Patent Owner's arguments (for example, Patent Owner cites "Voices" and provides what appear to be time references, but does not identify what this evidence is or if it is of record as an exhibit).

### 3. Summary

We have considered Petitioner's assertions, Patent Owner's arguments, and the evidence of record, and find that, on the current record, Petitioner has sufficiently mapped the limitations of independent claim 1 to the combination of Bernhard, Poovey, and Gracco, and has set forth a reason with rational underpinning why the ordinarily skilled artisan would have combined these references, with a reasonable expectation of success. Based on the evidence presented at this stage of the proceeding, Petitioner has shown under Ground 3 that it is more likely than not that at least one of the '781 patent's claims would have been obvious.

F. ASSERTED OBVIOUSNESS OF CLAIMS 1–9, 11, 13, AND 14 OVER  
BERNHARD, POOVEY, GRACCO, AND DEREY (GROUND 4)

We continue with Petitioner’s challenges for obviousness. Under Ground 4, Petitioner asserts that claims 1–9, 11, 13, and 14 would have been obvious and presents facts and arguments very similar to those set forth under Ground 3, citing the disclosures of Bernhard, Poovey, and Gracco in the same way, but adding Derey to the prior art combination for its teaching of a dental prosthesis fastener with a slotted distal end, designed to securely engage with the internal threading of an abutment via flexing legs, and so it also can be pulled out. Pet. 83–105 (citing Ex. 1002 ¶¶ 272–374; Ex. 1003 ¶¶ 13, 66, 105, 124, 126, 128–131, 134, 149, 155–158, 176, Figs. 3, 7A, 8, 9, 12, 27A, 27B; Ex. 1005 ¶¶ 79, 84; Ex. 1006, 187, Fig. 1; Ex. 1008, 4, 9–10, Figs. 5, 6; Ex. 1015, 298). Petitioner’s position is that Derey’s design would have been understood by the ordinarily skilled artisan to add to the ability to remove the temporary fastener/screw by pulling it out, similar to the design of the ’781 patent’s Figure 75. *Id.*

Patent Owner identifies the similarities between Petitioner’s Grounds 3 and 4 and the evidence asserted for each and renews the same arguments, but adds that Derey’s disclosed deflecting legs “are not relevant . . . because Derey is a snap-in system, not a screw-in system.” Prelim. Resp. 49–50 (citing Ex. 1003, 1; Ex. 2010 ¶¶ 172–173; Ex. 2012, 76; Ex. 2013; 13; Ex. 2014, 1–2).

On this record, we find Petitioner’s arguments and evidence under Ground 4, similar to the arguments and evidence under Ground 3, reasonably support Petitioner’s assertions of obviousness and we are not persuaded by Patent Owner’s arguments to the contrary. Thus, Petitioner

shows it is more likely than not that at least one challenged claim is unpatentable.

G. ASSERTED INDEFINITENESS (GROUND 1)

Petitioner asserts that claims 6 and 10–16 are unpatentable because they are indefinite. Pet. 31–40 (citing Ex. 1001, 5:31–35, 7:61–62, 11:31–34, 23:17–30, 24:58–59, 26:66–27:5, 28:16–19, Figs. 9, 75; Ex. 1002 ¶¶ 132–151; Ex. 1015, 202–03, 208, 289, 298; Ex. 1020, 932, 934, 939–40).

At this point, we take no position on Petitioner’s arguments over claim 6. Petitioner argues each of claim 6’s limitations is purely functional and Patent Owner does not directly counter that specific position. *See* Pet. 32–35 (citing, *inter alia*, *General Elec. Co. v. Wabash Appliance Corp.*, 304 U.S. 364, 370–71 (1938) (the point of novelty cannot be claimed purely by its function)); *see* Resp. 22–24. However, Patent Owner invokes 35 U.S.C. § 112(f) as permitting functional limitations that recite a *means for* performing a function. Prelim. Resp. 22–23. On the current record, it is not clear whether Patent Owner is arguing that claim 6 (or any other claim with similar functional limitations) is a means-plus-function claim. If this is Patent Owner’s argument, the parties should address this issue at trial and expressly identify the correct claim construction under 35 U.S.C. § 112(f) in further briefing. *See* 37 C.F.R. § 42.204(b)(3).

Regarding independent claim 10 and dependent claims 11–16, Petitioner points to the limitation “a distal portion [of the temporary fastener] having an outer surface comprising shaft threading having a shaft threading contour, wherein the shaft threading contour does not essentially match the implant abutment threads contour,” and argues the language *does*

*not essentially match* renders the independent claim and those claims depending from it indefinite. Pet. 35–40.

Petitioner argues that this claim language, on its own or in view of the Specification, is not clear enough to inform the ordinarily skilled artisan as to the claim scope. *Id.* Petitioner identifies that the written description indicates “that ‘the term[] ‘essentially’ mean[s]  $\pm 10$  percent.” *Id.* at 35 (citing Ex. 1001, 7:61–62). But, argues Petitioner, even accounting for some feature of the temporary screw’s threads plus-or-minus ten percent not-matching the contours of the abutment’s threads, there is no way to determine where the line may be drawn as to what falls under the claim and what does not because the Specification provides no standard or guidance for compliance with this term. *Id.* at 35–36.

Petitioner points to Patent Owner’s arguments during the prosecution of a related patent, where Patent Owner pointed to the asymmetrical threads of a temporary screw illustrated at Figure 75 and the symmetrical threads of a definitive screw and an abutment illustrated by Figure 9, and argued to an Examiner that they were *different*, i.e., do not match, but Petitioner argues that “it is not clear to a POSA from these figures—or anything else in the specification—whether or not they ‘essentially match’” or not. *Id.* at 37–38 (citing Ex. 1015, 202–03, 208; *and id.* at 208, 289, 298 (Patent Owner eventually removed “does not essentially match language” from the claims)). Further, Petitioner also points to other evidence from the prosecution of the ’781 patent challenged here where the Examiner indicated that threads of a prior art reference’s fastener that were interrupted by slots do not essentially match threads of an associated implant, but provided no further guidance on

the metes and bounds of the claim language. *Id.* at 38–39 (citing Ex. 1020, 932, 934, 939–40).

Patent Owner argues that the Specification’s identifying “essentially” to mean plus-or-minus ten percent is guidance enough. Prelim. Resp. 24–25. Patent Owner identifies several threading contour variables that might differ and be measured to determine whether threading contours essentially match: pitch, pitch angle, thread diameter, proximal thread angle, distal thread angle, contact area, volume filled, and thread continuity. *Id.* at 25–27. Patent Owner argues that “[t]hese are not difficult concepts for a POSA to understand” and (again) points to the contrast between the threads of the temporary screw of Figure 75 and those of the definitive screw and abutment of Figure 9 as illustrative of the meaning of the claim language. *Id.* at 27–28.

On the current record, we find Petitioner’s position persuasive.

A recent decision by our reviewing court, *Akamai Technologies*, 2025 WL 3274871, is instructive under the circumstances. According to *Akamai*, for claim terms invoking degree, such as whether one threading contour essentially matches another, there must be objective boundaries taught in the specification to determine what the term means. *Id.* at \*6. Further, “[a] claim term, even if it refers to certain objective measures,” such as *essentially match* may refer to plus-or-minus ten percent, “is indefinite if it ‘might mean several different things [but] no informed and confident choice is available among the contending definitions.’” *Id.* at \*7 (quoting *Interval Licensing*, 766 F.3d at 1373, which itself quotes *Nautilus*, 572 U.S. at 911 n.8). Here, one might, based on the disclosure in the Specification, be able to identify that a threading contour of a temporary screw is very different

from that of the threading contour of an abutment, e.g., when one has asymmetrical, sawtooth style threading and the other has symmetrical threading, but it does not appear that an ordinarily skilled artisan could draw an objective boundary around what threading contours do and do not essentially match.

For the reasons above, we find that Petitioner shows that at least one challenged claim is more likely than not unpatentable as indefinite under 35 U.S.C. § 112(b).

H. ASSERTED LACK OF WRITTEN DESCRIPTION AND  
ENABLEMENT (GROUND 2)

Under Ground 2, Petitioner presents arguments that several recited elements of claims 1–16 are not sufficiently described in the Specification to meet the written description requirement of 35 U.S.C. § 112(a). Pet. 40–63 (citing Ex. 1003 ¶¶ 152–209). Petitioner also mentions a lack of enablement, but without much, if any, further argument or support. *See id.* at 40 (heading). We do not here address every claim element Petitioner asserts is not supported, but, as explained below, we find some of Petitioner’s arguments persuasive on this record.

Although we are not persuaded thereby, we find it worth mentioning Petitioner’s first argument under this Ground, which asserts that the independent claims “encompass any temporary fastener thread pattern that is different than the definitive screw and implant abutment thread pattern.” Pet. 40. Petitioner argues that there is no written description support for such a broadly claimed concept when only the embodiment described in the Specification is that of Figure 75, discussed at column 23 of the ’781 patent. *Id.* at 41–45.

On the current record, we do not agree with Petitioner’s position, which appears to be a remnant from related IPR2025-00956, where the claims of U.S. Patent 11,937,992 B1 recite, for example, that a temporary screw has “threads in a pattern that is shaped differently from a pattern of the threads of [a] definitive screw”; no claim of the ’781 patent has this limitation. *Compare* IPR2025-00956, Ex. 1001, 25:36–27:16 (claims), *with* this proceeding’s Ex. 1001, 25:45–29:2 (PGR2025-00054 (claims)). We find that, on this record and under this argument, Petitioner does not address the actual claim language at issue in this proceeding. Inexplicably, Patent Owner appears to fully engage with this argument as if the challenged claims include the “different threads” limitation from the related proceeding’s patent. *See* Prelim. Resp. 30–33. In any event, we do not find this specific argument by Petitioner persuasive on this record.

Petitioner next argues that each independent claim (and thus, every claim) recites includes a “release limitation,” which is not fully supported by the Specification’s disclosure under § 112(a) because these claims encompass structures other than the split post temporary screw of Figure 75 (also having asymmetrical threads), which Petitioner argues is the only structure disclosed providing for axial release (pulled out) of a fastener/screw (after being rotated in. Pet. 46–52 (citing Ex. 1001, 5:31–35, 11:31–34, 23:17–30, 24:58–59, 26:4–13, 26:66–27:10, 27:41–50, 28:32–36, Fig. 75; Ex. 1002 ¶¶ 162–167; Ex. 1021 ¶ 50). As an example of the potential breadth of the independent claims, Petitioner points to Patent Owner’s assertions of infringement in a related district court litigation where the accused device/system includes a temporary screw with detachable

threads (at least partially) that can be screwed into an abutment and then pulled out. *Id.* at 47 (citing Ex. 1021 ¶ 50).

Patent Owner argues that the “release limitation” is disclosed by the ’781 patent in embodiments other than the “split post with deflecting legs” structure argued by Petitioner. Prelim. Resp. 33–35. These other embodiments, so argues Patent Owner, include a temporary fastener that provides “an interference fit” in the abutment threads. *Id.* at 33. Patent Owner also argues that the temporary screw might have asymmetric threads and/or serrations, per the Specification’s explanation of the meaning of “or.” *Id.* at 34.

On this record we find that Petitioner has a good, and the better, position on this argument. For context, the “release limitation” of each independent claim is basically the same: *the temporary fastener is configured to release at least a portion of the temporary fastener and the coping from the implant abutment as a unit when an axial release force is applied.* See Ex. 1001, 26:4–8 (claim 1), 26:66–27:5 (claim 6), 27:41–45 (claim 8), 28:33–37 (claim 10). Moreover, each independent claim requires the temporary fastener to engage the abutment threads via rotary engagement, at an engagement depth, at a predetermined torque, suggesting the fastener is a screw or, at least, screwed in; and claims 1 and 10 are clear that the temporary fastener has threading.

The temporary screw of Figure 75 and the related written description is the only disclosure of such a structure and function. See *id.* at 23:3–34, Fig. 75. The Specification does not describe an “interference fit” temporary fastener engaging with an abutment in this way: no interference fit fastener is described with threads, or to be rotated into an abutment. See *id.* at

24:51–57. To the contrary, the Specification describes an interference fit temporary fastener as inserted into an abutment only axially (pushed in), rather than rotated thereinto (screwed in). *Id.* Thus, it appears that the Specification describes only a single structure for being screwed in and then released by axial force, i.e., pulled out, from an abutment, which is shown at Figure 75, but the claims cover broader subject matter, i.e., nearly any temporary fastener that can be pulled out. *See Ariad Pharms.*, 598 F.3d at 1352; *Tronzo v. Biomet, Inc.*, 156 F.3d 1154 (Fed. Cir. 1998).

Petitioner also argues that claim 5 recites “the distal shaft portion of the temporary fastener comprises an outer surface which is sized and configured to deform in response to the axial release force,” and that the Specification does not describe any structure performing this function, thus, failing to provide a sufficient written description under § 112(a). Pet. 56 (citing Ex. 1001, 4:16–25, 5:31–35, 11:31–34, 23:17–30, 24:58–59, 26:35–40, Fig. 75; Ex. 1002 ¶¶ 190–193; Ex. 1005 ¶ 79, 84).

Regarding this argument, Patent Owner again points to the ’781 patent’s disclosed interference fit embodiment of a temporary fastener, which Patent Owner argues would necessarily be made of a material like PEEK (polyether ether ketone) polymer. Prelim. Resp. 41–42 (citing Ex. 2010 ¶¶ 147–149). Patent Owner argues that “[a]xial extraction without degrading the permanent screw’s function is one of the key advantages of all embodiments of the disclosed invention.” *Id.* at 41.

The ’781 patent does not ever explicitly state that the temporary fastener/screw has a distal outer surface able to deform in response to an axial release force. *See generally* Ex. 1001. A temporary fastener/screw with a deformable outer surface is only disclosed in relation to the fastener’s

interaction with its cap (a proximal portion), which may separate from the post when the coping is pulled off, leaving part of the fastener in the abutment. Ex. 1001, 4:66–5:10, 14:38–43, 22:29–35. As for the use of PEEK material, the Specification discloses it may be used for the temporary fastener and its cap in embodiments where the cap separates from the attachment’s post via axial force. *Id.* at 17:55–57, 21:25–44. Again, this interaction is at the proximal end of the fastener. On the current record, we agree with Petitioner’s position.

For the reasons discussed above, we find, based on some of Petitioner’s arguments in the Petition, some claims appear more likely than not to be unpatentable under 35 U.S.C. § 112(a) for lack of written description.

### III. CONCLUSION

On the record before us at this stage in the proceeding, Petitioner has demonstrated that it is more likely than not that at least one challenged claim of the ’781 patent is unpatentable under at least one ground. Accordingly, we institute post-grant review of all challenged claims of the ’781 patent on each ground alleged by Petitioner. Our findings at this stage of the proceeding are preliminary. This decision does not reflect a final determination of any fact or on the patentability of the claims.

ORDER

Accordingly, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 324, post-grant review of claims 1–16 of the '781 patent, in accordance with each ground of challenge in the Petition, is hereby *instituted*; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 324(c) and 37 C.F.R. § 42.4(b), post-grant review of the '781 patent will commence on the entry date of this Decision, and notice is hereby given of the institution of a trial.

PGR2025-00054  
Patent 12,156,781 B1

For PETITIONER:

Sheila Mortazavi  
Georg Reitboeck  
Mark A. Chapman  
Christopher Gosslin  
HAUG PARTNERS LLP  
smortavazi@haugpartners.com  
greitboeck@haugpartners.com  
mchapman@haugpartners.com  
cgosselin@haugpartners.com

For PATENT OWNER:

Andrew D. Kasnevich  
KDW FIRM PLLC  
akasnevich@kdwfirm.com

Dan Whittle  
dan.whittle@patentleverage.com