

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

PATENT OWNER'S PRELIMINARY RESPONSE

September 25, 2025

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35 U.S.C. § 325(d)1

Regulations

37 C.F.R. § 42.208(c)1

LIST OF PATENT OWNER'S EXHIBITS

Exhibit No.	Description
2001	First Supplemental Complaint, <i>Smart Denture Conversions, LLC v. Straumann USA, LLC</i> , No. 1:24-cv-00507-JCB (D. Del. Feb. 4, 2025), ECF No. 34.
2002	Docket sheet, <i>Smart Denture Conversions, LLC v. Straumann USA, LLC</i> , No. 1:24-cv-00507-JCB (D. Del.).
2003	Complaint, <i>Smart Denture Conversions, LLC v. Straumann USA, LLC</i> , No. 1:24-cv-00507-JCB (D. Del. Apr. 23, 2024), ECF No. 1.
2004	Defendant Straumann USA, LLC's Opening Brief in Support of its Motion to Dismiss Plaintiff's Complaint for Failure to State a Claim for Relief under Fed. R. Civ. P. 12(b)(6), <i>Smart Denture Conversions, LLC v. Straumann USA, LLC</i> , No. 1:24-cv-00507-JCB (D. Del. July 29, 2024), ECF No. 13.
2005	Order, <i>Smart Denture Conversions, LLC v. Straumann USA, LLC</i> , No. 1:24-cv-00507-JCB (D. Del. Jan. 30, 2025), ECF No. 31 ("scheduling order").
2006	Stipulated Protective Order, <i>Smart Denture Conversions, LLC v. Straumann USA, LLC</i> , No. 1:24-cv-00507-JCB (D. Del. Mar. 4, 2025), ECF No. 44.
2007	Defendant Straumann USA, LLC's Initial Invalidity Contentions, No. 1:24-cv-00507-JCB (D. Del.) (served June 2, 2025).
2008	Order Regulating Practice for civil cases assigned to The Honorable J. Campbell Barker, <i>Smart Denture Conversions, LLC v. Straumann USA, LLC</i> , No. 1:24-cv-00507-JCB (D. Del. Dec. 16, 2024), ECF No. 22.
2009	Notice of <i>Sotera</i> Stipulation, <i>Smart Denture Conversions, LLC v. Straumann USA, LLC</i> , No. 1:24-cv-00507-JCB (D. Del. June 4, 2025), ECF No. 57.
2010	Declaration of Karl Leinsing.
2011	Smart Denture Conversions, <i>Technique Manual</i> , available at https://shorturl.at/798cX .
2012	International Patent Application No. WO 96/2019 (Sept. 26, 1996) ("Sutter 1996")
2013	U.S. Patent No. 6,332,777 B1 (Dec. 25, 2001) ("Sutter 2001")
2014	U.S. Patent No. 3,115,804 (Dec. 31, 1963) ("Johnson")
2015	U.S. Patent No. 5,904,483 (May 18, 1999) ("Wade")
2016	U.S. Patent No. 6,517,543 B1 (Feb. 11, 2003) ("Berrevoets")

2017	U.S. Patent No. 9,568,037 B2 (Feb. 14, 2017) (“Staniszewski”)
2018	Pub. No. US2002/0094255 A1 (July 18, 2002) (“Neuhengen”)

TABLE OF ABBREVIATIONS

Bernhard	Pub. No. US2017/0202649 A1 (July 20, 2017), Pet. Ex. 1003
Berrevoets	U.S. Patent No. 6,517,543 B1 (Feb. 11, 2003)
Derey	WO 2013/030839 A1 (Mar. 7, 2013), Pet. Ex. 1008
Ebi	Pub. No. US2004/0180308 A1 (Sept. 16, 2004)
Gracco	A. Gracco, <i>Effects of Thread Shape on the Pullout Strength of Miniscrews</i> , 142 Am. J. Orthodontics & Dentofacial Orthopedics 186 (2012), Pet. Ex. 1006
IDS	Information Disclosure Statement
IPR	Inter partes review
Johnson	U.S. Patent No. 3,115,804 (Dec. 31, 1963)
Kofford	U.S. Patent No. 11,311,354 (Apr. 26, 2022), Pet. Ex. 1013
Lannan	Pub. No. US2008/0206709 A1 (Aug. 28, 2008)
Lazzara	U.S. Patent No. 4,850,870 (Jul. 25, 1989)
Leinsing Decl. ¶ _	Indicated paragraph of the Declaration of Karl Leinsing, Patent Owner's Ex. 2010
Neuhengen	Pub. No. US2002/0094255 A1 (Jul. 18, 2002)
Nino	U.S. Patent No. 7,938,046 (May 10, 2011), Pet. Ex. 1020
Parallel Litigation	<i>Smart Denture Conversions, LLC v. Straumann USA, LLC</i> , No. 1:24-cv-00507-JCB (D. Del.)
Patent Owner	Patent Owner and Respondent Smart Denture Conversions, LLC
Pet. Ex.	Petitioner's Exhibit
Petition	Petition for Inter Partes Review of U.S. Patent No. 11,937,992, Paper 2, IPR2025-00956 (PTAB Apr. 30, 2025)
Petitioner	Straumann USA, LLC
PGR	Post-grant review
Poovey	Pub. No. US2016/0045290 A1 (Feb. 18, 2016), Pet. Ex. 1005
PTAB	Patent Trial and Appeal Board
PTO	U.S. Patent and Trademark Office
Ruetschi	DE 3808238 A1 (Oct. 27, 1988), Pet. Exs. 1021, 1022
SDC	Patent Owner and Respondent Smart Denture Conversions, LLC
Staniszewski	U.S. Patent No. 9,568,037 B2 (Feb. 14, 2017)
Straumann	Petitioner Straumann USA, LLC

Sutter (1996)	International Patent Application No. WO 96/29019 (Sept. 26, 1996)
Sutter (2001)	U.S. Patent No. 6,332,777 B1 (Dec. 25, 2001)
Voices	Voices from the Bench, Episode 280, <i>Getting Smart About Conversions with Dr. Brandon Kofford</i> (Aug. 7, 2023), available at https://shorturl.at/vFDBy
Wade	U.S. Patent No. 5,904,483 (May 18, 1999)
'781 patent	U.S. Patent No. 12,156,781 (Dec. 3, 2024)
'992 patent	U.S. Patent No. 11,937,992 (Mar. 26, 2024)

I. INTRODUCTION

Pursuant to 37 C.F.R. § 42.207(a) and 35 U.S.C. § 323, Patent Owner submits this Preliminary Response to the Petition for Post-Grant Review of U.S. Patent No. 12,156,781 filed by Petitioner Straumann. This Preliminary Response is timely filed.

In addition to the grounds for discretionary denial set forth in SDC’s Request for Discretionary Denial and Supporting Brief (Paper 7),¹ the Board should deny institution because Petitioner failed to show that it is “more likely than not” that at least one of the challenged claims is unpatentable. 37 C.F.R. § 42.208(c); *see also* 35 U.S.C. § 324(a). Ground 1 is meritless because claims 6 and 10–16 are not impermissibly indefinite. Ground 2 is meritless because it relies on the false notion that the ’781 patent’s specification fails to enable the claims. The disclosures and

¹ SDC’s Request for Discretionary Denial did not explicitly argue any 35 U.S.C. § 325(d) grounds. However, the statutory discretion that § 325(d) grants the Director does not depend in any way on party submissions. *See also* PTO, *FAQs for Interim Processes for PTAB Workload Management*, <https://shorturl.at/35yDM> (last visited Sept. 23, 2025) (making clear that the Director “has broad authority to determine whether to exercise discretion to institute an IPR or PGR” and is not “limited to the arguments the parties raise in their briefs”).

specifications disprove that argument. Grounds 3 and 4 are meritless because a POSA would not have a reasonable expectation of successfully combining the prior art in the way the Petition describes. The Petition's heavy reliance on its accompanying expert declaration is unsurprising; it necessarily must use the expert testimony to back-fill crucial gaps in the prior art.

The Board should deny the Petition and let the parties' dispute proceed in federal district court, where it began 17 months ago in April 2024.²

II. OVERVIEW OF THE '781 PATENT

The '781 patent describes 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.” Pet. Ex. 1001, at 1. “The disclosed temporary fasteners initially orient and hold a coping against an

² For brevity, Patent Owner may not have addressed all characterizations of the applied references and the challenged claims and reserves the right to do so should institution be granted. The absence of a response by Patent Owner to any of the positions presented in the Petition or the associated expert declaration does not constitute a concession to those positions. The fact that Patent Owner's Preliminary Response has focused on particular arguments is not a concession that there are no other arguments for patentability of the challenged claims.

abutment,” and then “[t]he aligned coping can be picked-up in a closed-tray impression process without unscrewing the temporary fastener.” Pet. Ex. 1001, at 1. “In this manner, the coping is held against the abutment for the pick-up process with a force oriented identically to that of the final screw mounting.” Pet. Ex. 1001, at 31. The temporary fastener thus allows both rotational attachment and torquing to provide the same alignment force vector as the permanent screw. “Embodiments” of these temporary fasteners “include threaded posts that release copings from the abutment through axial forces” as well as “a threaded post with separable cap that is picked-up with the coping.” Pet. Ex. 1001, at 2.

The ’781 patent and its parent patents underwent thorough review during prosecution. In the prosecution of one parent, the ’992 patent, there were several office actions, both non-final and final, some resulting in amendments. *See, e.g.*, Pet. Ex. 1015, at 175, 200–231, 236, 283–302. The examiner rejected multiple claims for obviousness in light of prior art. Pet. Ex. 1015, at 224–236. In two IDS, Patent Owner provided 105 prior-art references, all of which were considered. Pet. Ex. 1015, at 274–275, 762–774, 1068–1069, 1072–1083. The examiner independently conducted her own detailed prior-art searches. Pet. Ex. 1015, at 1046–1066. And in response to examiner concerns, Patent Owner explicitly addressed specification and disclosure issues related to those the Petition now raises as to the ’781 patent. *See* Pet. Ex. 1015, at 295–299.

Ultimately, the examiner allowed the claims over several references of what she considered “[t]he closest prior art” and explained her reasoning. Pet. Ex. 1015, at 1038–1040. The ’992 patent issued March 26, 2024.

Patent Owner filed continuation application 18/424,696 in January 2024. Pet. Ex. 1020, at 1. As with the parent ’992 patent, the examiner conducted detailed prior-art searches independent of Patent Owner’s submissions. Pet. Ex. 1020, at 1034–1054. There was a detailed non-final office action in which the examiner rejected multiple claims in light of prior art, some of which were references the examiner found through her own searches. Pet. Ex. 1020, at 930–947, 949. Patent Owner submitted an amendment in response to the office action. Pet. Ex. 1020, at 986–1009, 1011–1017. Patent Owner submitted 122 prior art references in an IDS, which the examiner marked “considered” on June 5, 2024. Pet. Ex. 1020, at 881–893, 967–979. After an examiner interview, the examiner issued a notice of allowability. Pet. Ex. 1020, at 1018, 1019–1034. The examiner rejected certain amendments submitted after allowance and then allowed later amendments, finding the claims patentable over specific references the examiner identified as “[t]he closest prior art.” Pet. Ex. 1020, at 1076–1077, 1108–1123. The ’781 patent issued December 3, 2024; a certificate of correction was later issued to address minor errors in the patent. Pet. Ex. 1020, at 1169.

Petitioner twice complains that “Patent Owner apparently drafted the claims to try to cover Petitioner’s device.” Petition at 2; *id.* at 27 (“Patent Owner apparently drafted the claims to try to cover Petitioner’s NeoConvert product.”). That assumption is irrelevant. “There is nothing unusual or improper about drafting claims to cover a competitor’s product, as long as there is a basis in the pending application.” *SynQor, Inc. v. Artesyn Techs., Inc.*, 2011 WL 2729214, at *7 (E.D. Tex. July 13, 2011); *see also Kingsdown Med. Consultants, Ltd. v. Hollister Inc.*, 863 F.2d 867, 874 (Fed. Cir. 1988) (“[T]here is nothing improper, illegal, or inequitable in filing a patent application for the purpose of obtaining a right to exclude a known competitor’s product from the market.”).

III. SUMMARY OF PETITIONER’S REFERENCES

The Petition’s obviousness arguments rely on various combinations of four prior-art references: Bernhard, Poovey, Gracco, and Derey. Bernhard and Poovey—the centerpieces of Grounds 3 and 4—were before the examiner during prosecution, and the challenged claims were already allowed over Bernhard and Poovey. These and the other two are discussed here in more detail.

A. Bernhard

Bernhard discloses various snap-fit designs for fasteners that temporarily connect a coping to an abutment during the dental conversion process. The “provisional connection features” disclosed “can comprise one or more fingers

and/or can comprise a spring,” “can be configured to be coupled via a snap-fit and/or via a friction fit,” “can include an elongate member,” “can include a plurality of protrusions and slots,” “can also include a flange,” or “can include a plurality of grooves.” Pet. Ex. 1003, at 28.

According to the Petition, “Bernhard also explains that a threaded screw can be used to connect the coping to the abutment in order ‘to reduce the likelihood of inadvertent detachment.’” Petition at 15. Petitioner omits, however, that this teaching refers to the *permanent screw* that will ultimately hold the prosthesis to the abutment, not to a *temporary fastener* used in the pick-up process. See Pet. Ex. 1003, at 82. Bernhard does not describe or suggest a temporary fastener with screw threading. Nor does Bernhard attach the coping for pick-up processing using the same abutment securing feature as the final permanent attachment.

Bernhard was *before the examiner* during the ’781 patent’s prosecution. The reference appears on the face of the ’781 patent. Pet. Ex. 1001, at 2. Furthermore, Patent Owner identified Bernhard in a January 26, 2024 IDS submission, and the examiner marked it “considered” on June 5, 2024. Pet. Ex. 1020, at 889, 975, 979.

B. Poovey

Poovey discloses an “impression coping securing screw” that temporarily connects a coping to an implant during the impression phase of a conversion procedure. This “impression coping securing screw comprises threads made of

metal or plastic and coated with a heat labile plastic or silicone.” Pet. Ex. 1005, at 12. This screw would be “threaded into the internal threading in a dental implant” “by exerting a rotational force on the impression coping securing screw.” Pet. Ex. 1005, at 12. Then, “[a]t the time of removal, the heat labile plastic, or silicone threads (or heat labile plastic, or silicone-coated threads) are activated to allow the impression coping, secured by the impression coping securing screw, to be disengaged from the implant and removed with the impression of the patient’s dentitia.” Pet. Ex. 1005, at 12. This activation “may include” heating the health labile plastic or silicone treads enough “to dissolve or soften sufficiently the plastic or silicone material” to allow removal. Pet. Ex. 1005, at 12.

Like Bernhard, Poovey *was before the examiner* during the ’781 patent’s prosecution. The reference appears on the face of the ’992 patent. Pet. Ex. 1001, at 2. Furthermore, Patent Owner identified Poovey in a January 26, 2024 IDS submission, and the examiner marked it “considered” on June 5, 2024. Pet. Ex. 1020, at 888, 947, 979.

Poovey was ultimately abandoned before any patent issued. This is likely because “coat[ing]” metal or plastic threads “with a heat labile plastic or silicone,” Pet. Ex. 1005, at 12, is not practical for the extraordinarily small screws used in dental implants. Silicone coating on the threads would prevent or impede the initial screw insertion. Additionally, using heat as a means of releasing the “impression

coping securing screw” from the implant is impractical. Heating the screw to the temperature necessary to “dissolve or soften the plastic or silicone sufficiently to allow removal ... without unscrewing the impression coping security screw,” Pet. Ex. 1005, at 12, would be unworkable in a clinical setting and likely uncomfortable or even painful for the patient. Leinsing Decl. ¶¶ 57–58, 167–168.

C. Gracco

Gracco, a research study, describes an experiment measuring the force required to pull orthodontic miniscrews with different thread designs out of synthetic bone. Pet. Ex. 1006, at 186–187. Specifically, the Petition points to Gracco’s “asymmetric buttress thread with a smaller proximal angle,” which “could be pulled out with less force than a reverse buttress thread.” Petition at 69. The principle that different thread profiles affect the pullout force required to disengage a screw is well-known and the natural result of inherent geometry.

For example, the implant to which Berrevoets’ fastener is attached, which implant is screwed directly into bone, appears to show asymmetric threads 32 that the Petition would call ‘reverse buttress threads’:

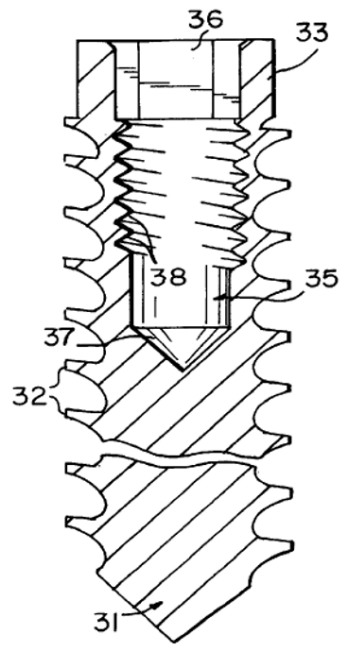


FIG. 2

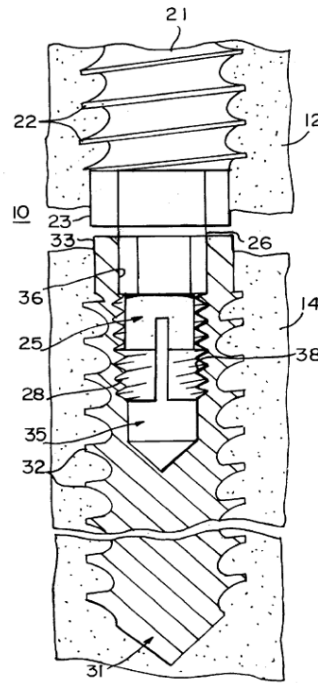
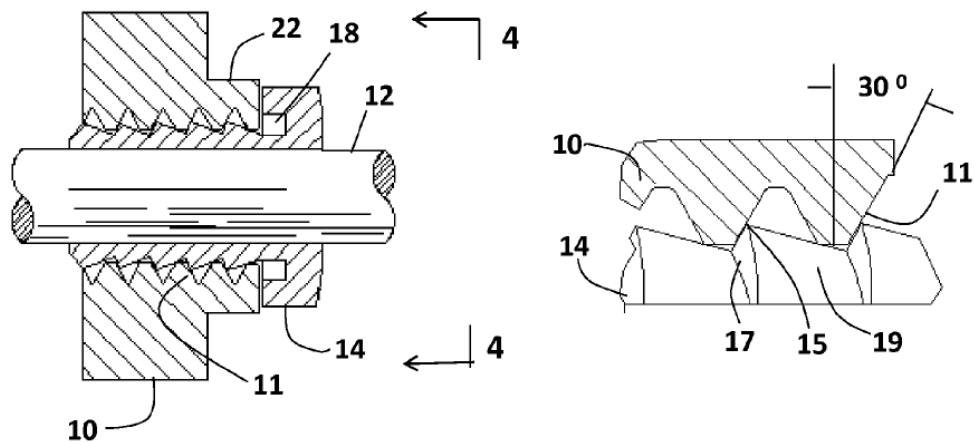


FIG. 3

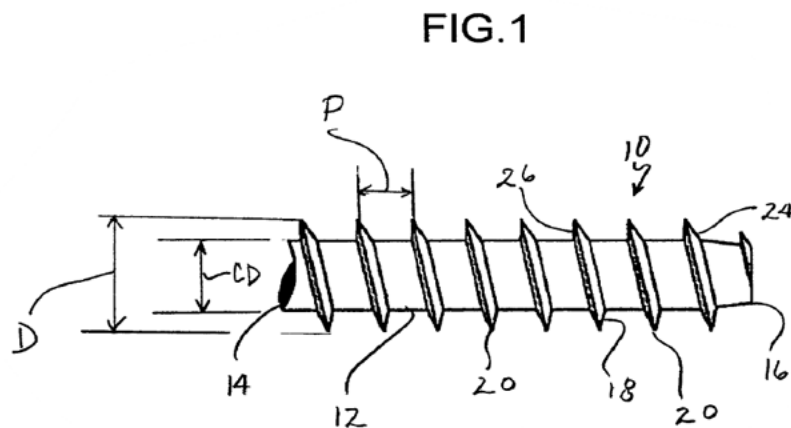
Ex. 2016, at 2–3. The examiner independently identified Berrevoets and rejected several claims based on it; Berrevoets was also submitted to the examiner in an IDS; the examiner marked it “considered” on June 5, 2024. Pet. Ex. 1020, at 931–947, 949, 973, 979.

Similarly, Staniszewski’s threaded shaft has an asymmetric thread profile:



Ex. 2017, at 1. Staniszewski, unlike Gracco or Berrevoets, also teaches the meshing of unmatched threading profiles, one symmetrical and one asymmetrical. Staniszewski was submitted to the examiner in an IDS; the examiner marked it “considered” on June 5, 2024. *See* Pet. Ex. 1020, at 1068–1069.

Neuhengen likewise shows a screw with an asymmetric thread profile:



Ex. 2018, at 2. Neuhengen explains that in “self-tapping or thread forming screws,” to “increase the amount of loosening torque required to remove the

screw”—i.e., “to prevent unwanted unthreading”—the engineer can “make the thread of the screw asymmetrical.” Ex. 2018, at 3. Furthermore, Neuhengen observes, “[a]nother object of the present invention is to provide an improved thread forming screw which is designed to have increased resistance to pullout.” Ex. 2018, at 3; *see also id.* at 4 (“It has been found that by providing the relatively smaller trailing angle β , that resistance to pullout is increased over prior configurations.”). The examiner identified Neuhengen in a Notice of References Cited in March 2024. Pet. Ex. 1020, at 949. She also rejected one claim based on a prior-art combination that included Neuhengen. Pet. Ex. 1020, at 945. The examiner also marked an IDS disclosing Neuhengen as “considered” on June 5, 2024. Pet. Ex. 1020, at 976, 979.

Furthermore, the screws in Gracco’s experiment were designed to cut into bone; they were “self-drilling and self-tapping, with a cutting flute at their apex.” Pet. Ex. 1006, at 187. Because these screws were *self-cutting*, by definition the *screw threading matched the threading they cut into the synthetic bone material*. Leinsing Decl. ¶ 60. Gracco, furthermore, does not teach any method for extracting a screw through axial force that does not degrade the female threading around it—a critical feature for a *temporary* fastener. Leinsing Decl. ¶ 61.

Gracco itself confirms that the inherent geometric characteristics of different screw profiles are well-known and Gracco’s experiment was not novel. “Measuring

performance in pullout tests with axial forces is a well-established method to compare different screw designs, and the resulting pullout strength has been described in the orthopedic, maxillofacial surgery, and orthodontic fields as a fundamental biomechanical parameter contributing to the primary stability of screws.” Pet. Ex. 1006, at 3. The “buttress reverse” threaded screw was the “commercially available control design” against which Gracco’s other configurations were measured. Pet. Ex. 1006, at 4. Gracco attributes the “significant reduction in pullout force found between the buttress reverse and the buttress thread miniscrews” to “the geometry of the thread that was inclined toward the tip, thus reducing the resistance to removal in an axial direction.” Pet. Ex. 1006, at 6. “This finding was consistent with previous reports” as well. Pet. Ex. 1006, at 6 nn.38–40 (citing three other previous studies on mechanical properties of bone screws).

D. Derey

Derey teaches a plastic snap-in connector to hold elements temporarily to an implant or abutment during a denture conversion. Pet. Ex. 1008, at 1. Specifically, Derey discloses a push-in fastener that uses a split post structure to “hold[] the internal thread” of the dental implant “from the inside.” Pet. Ex. 1008, at 1.

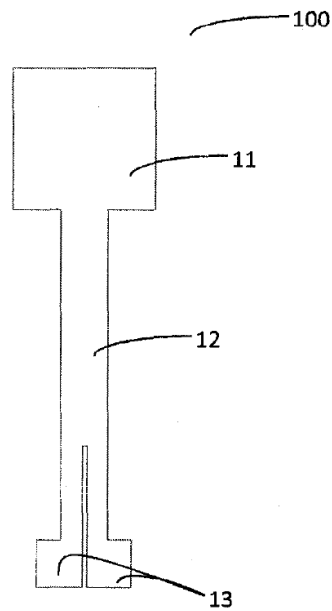


Fig. 5

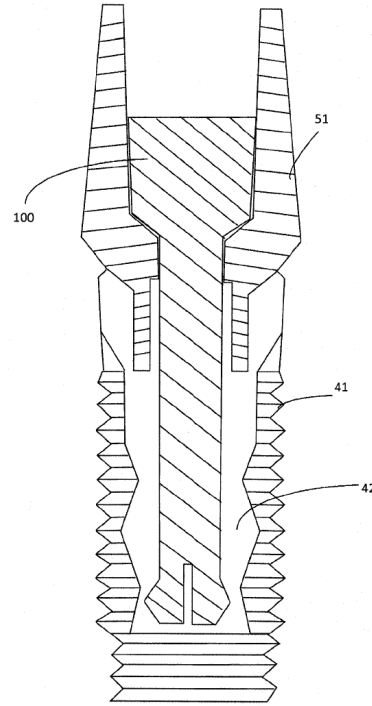


Fig. 6

Pet. Ex. 1008, at 18–19. Derey's snap-in connector does not, however, have screw threads. The connector is pushed in and pulled out and so does not have the torquing benefits of a screw-threaded temporary fastener.

The examiner did not consider Derey. She did, however, consider several prior art references that are cumulative to Derey because they disclose fasteners that similarly use a split-post structure to grip the female threading of an implant abutment. Sutter (1996) discloses such a fastener:

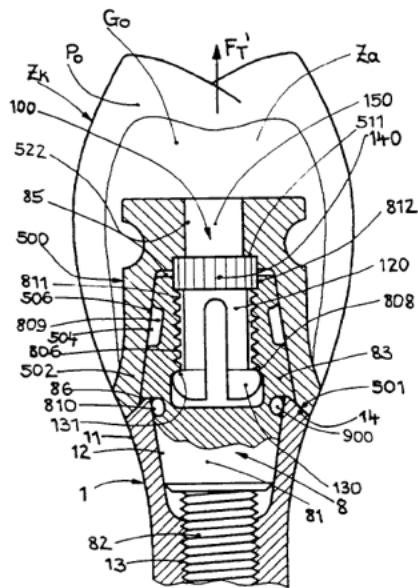


Fig. 19

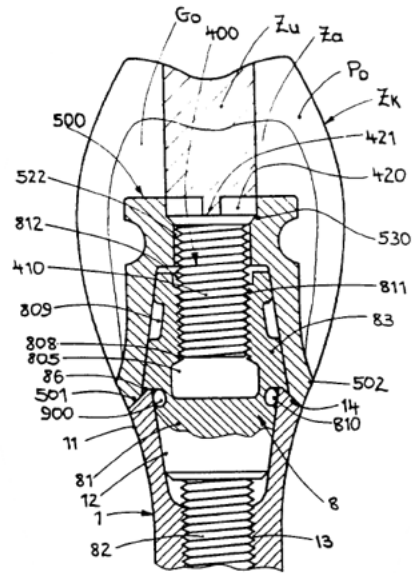
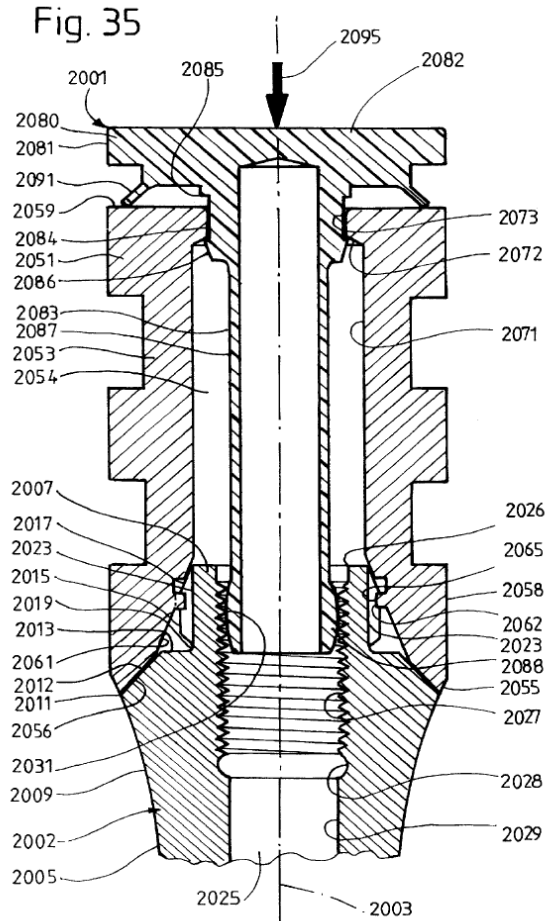


Fig. 20

Ex. 2012, at 76. In Figure 19, the temporary fastener has a deflecting split post which grips the threaded inside of an implant abutment. With the temporary fastener removed, in Figure 20 the definitive screw with threads matching the implant abutment permanently attaches the coping and prosthesis. Sutter (1996) was provided to the examiner in an IDS; she marked it “examined” on June 5, 2024. Pet. Ex. 1020, at 977, 979.

Sutter (2001)’s Figure 35 discloses a similar embodiment.

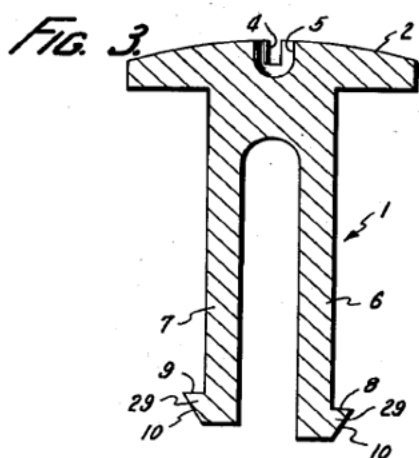


Ex. 2013, at 13. In Figure 35, “[t]he anchoring part 2005 has a generally cylindrical section below, not visible, with an outer threading and a trumpet-shaped section 2009 which spreads out upwards from the generally cylindrical section.”

Ex. 2013, at 26. The hollow fastener post attaches to the implant abutment by friction fit; “[t]he interior threading 2027 of the support thus forms a fixing section and/or attachment section 2031 on which, or in which, the fixing section 2088 of the connection element is detachably jammed fast.” E. 2013, at 27. Sutter (2001)

was provided to the examiner in an IDS; she marked in “examined” on June 5, 2024. Pet. Ex. 1020, at 968, 979.

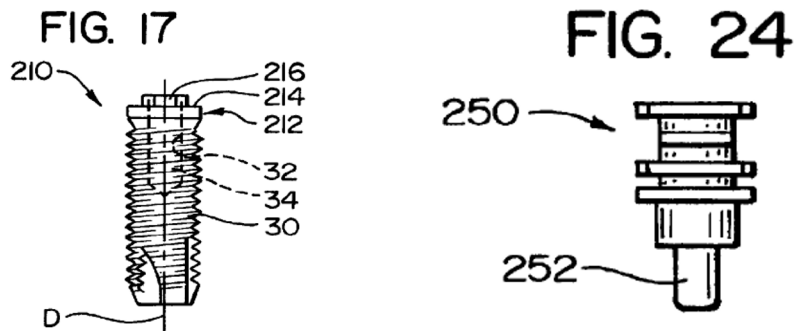
Johnson similarly discloses a push-in fastener with “two flexible legs or prongs” that “terminate in lips 29” that match the female threading of the base element. Ex. 2014, at 2.



Ex. 2014, at 1. Because the lips engage the base element’s female threading, the fastener can be torqued with screwing motion; because of the “flexible legs or prongs,” the fastener can be pushed in with an axial force. Ex. 2014, at 2. Johnson was provided to the examiner in an IDS; she marked it “examined” on June 5, 2024. Pet. Ex. 1020, at 967, 979.

Prior art considered by the examiner also discloses temporary fasteners without a split-post structure that temporarily hold to the inside threading of a base element by friction fit. Wade’s Figure 24 discloses a “surgical impression feather”

with “a lower post 252” that “enters the screw chamber 34 defined by the implant to form a friction fit that holds the feather 250 in place while the impression is being taken.”



Ex. 2015, at 5, 7. Because “the post 252 is not threaded, however,” it “may be withdrawn when the impression is removed.” Ex. 2015, at 16–17. Wade was provided to the examiner in an IDS; she marked it “examined” on June 5, 2024. Pet. Ex. 1020, at 972, 979.

Prior art that the examiner herself identified (Berrevoets) discloses a split-bottom screw that is axially engaged for securing into a bone implant, rather than using a friction fit.

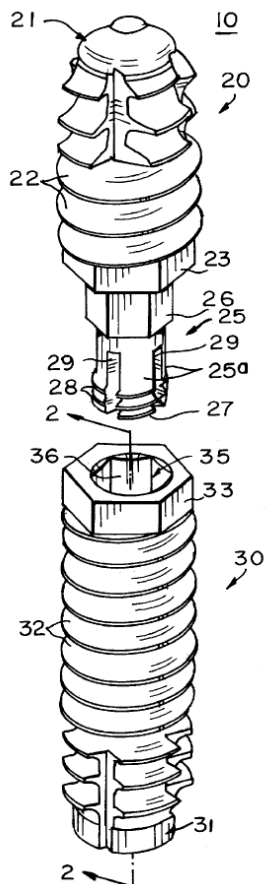


FIG. 1

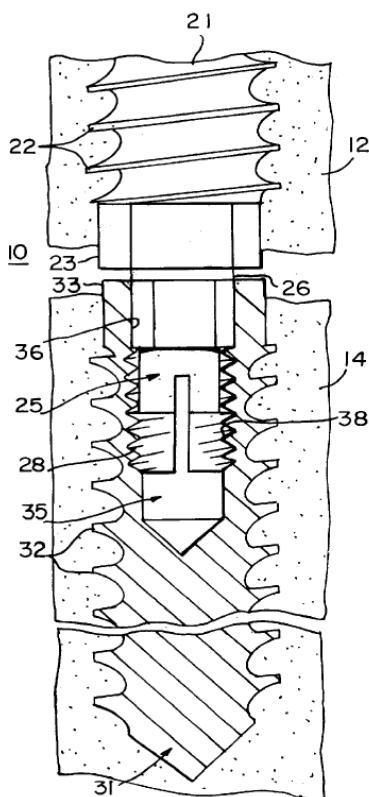


FIG. 3

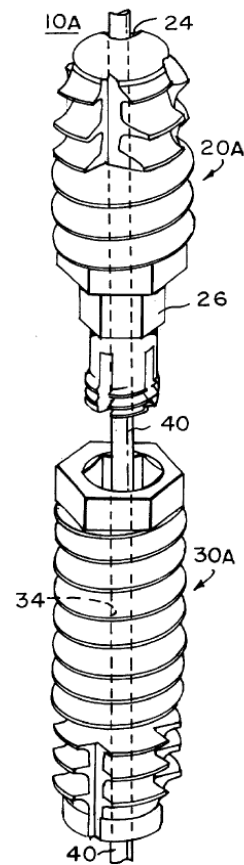


FIG. 4

Ex. 2016, at 2–3. The examiner independently identified Berrevoets and rejected several claims based on it; Berrevoets was also submitted to the examiner in an IDS; the examiner marked it “considered” on June 5, 2024. Pet. Ex. 1020, at 931–947, 949, 973, 979.

Finally, the ’781 patent itself discusses the tradeoffs and disadvantages of existing snap-on options at length:

For snap-on systems, a closed impression tray pick-up technique may be done. ... However, it is desirable to ensure that the assembly of snap-on copings can be removed without patient discomfort. ... Some snap-on

systems provide features to provide different retention levels, but this complicates the installation process. Special tools have been introduced to help separate impression trays or prostheses with snap-on systems but may still result in patient discomfort. Since snap-on systems are generally physically larger than dental screws, converting an existing denture may require large clearance cavities to be bored into the existing denture before it can be used as an impression tray in a pick-up coping process. These large holes may significantly reduce the mechanical stability of the existing denture. The mechanical precision required of snap-on system elements generally makes them more expensive than screw-attached systems.

Pet. Ex. 1001, at 30. Furthermore:

Other hybrid systems that use a snap-on engagement for the pick-up coping during transfer and subsequent screw attachment have also been proposed, but detailed information on the tradeoffs in precision and associated complexity or size required for equivalent performance to open-tray impression screw techniques have not been disclosed.

Pet. Ex. 1001, at 31. And “[t]he simplicity of screw-attached systems provides some benefits over snap-on systems beyond fabrication cost,” including “axial

tension control,” “self-aligning characteristics,” and “independence for removal since each coping can be loosened individually.” Pet. Ex. 1001, at 30.

The Petition argues that Derey would have made it obvious to “design the temporary screw to have a slot to create a split-post structure with deflecting legs, in order to make it easier to pull the screw out of the abutment while still ensuring that the temporary connection is stable and secure.” Petition at 85. But Derey’s disclosure of a snap-fit connector that grips the inside threading of an implant abutment with a friction fit teaches no more than what a reasonable examiner would consider to be taught by the prior art already before the PTO, including, specifically, Sutter (1996), Sutter (2001), Johnson, Wade, Berrevoets, and the discussion of prior art snap-fit systems included in the ’781 patent’s specification itself. Leinsing Decl. ¶¶ 71–80.

IV. PERSON OF ORDINARY SKILL IN THE ART

Petitioner proposes that a POSA “would have [1] at least a bachelor’s degree in mechanical engineering, biomedical engineering, materials science engineering, or an equivalent degree, [2] plus at least five years of experience working with (researching, developing and/or designing) dental implants and prostheses, [3] including familiarity and experience with fasteners (threaded and otherwise) used to connect prostheses, implants and related components.” Petition at 31.

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.

V. PETITIONER HAS NOT ESTABLISHED THAT IT IS MORE LIKELY THAN NOT THAT ANY CLAIM IS UNPATENTABLE

By statute, the Board may institute a PGR only if it determines “that the information presented in the petition ..., if such information is not rebutted, would demonstrate that it is *more likely than not* that at least 1 of the claims challenged in the petition is unpatentable.” 35 U.S.C. § 324(a) (emphasis added). This is a higher standard than the “reasonable likelihood” standard to institute an IPR under

35 U.S.C. § 314(a).³ The petitioner always bears the burden of proof in showing PGR should be instituted. *EMI Porta OPCO, LLC v. Woodfold Mfg., Inc.*, PGR2018-00096, 2019 WL 1096608, at *8 (PTAB Mar. 7, 2019).

A. Ground 1: Claims 6 And 10 Are Not Indefinite

A patent claim is indefinite only 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. 898, 901 (2014). Neither of Petitioner’s arguments carry its burden to show that Claims 6 and 10 are indefinite and therefore unpatentable.

1. Claim 6’s Functional Limitations Are Permitted By § 112(f).

Petitioner argues that Claim 6 “impermissibly recites only functional limitations at the alleged point of novelty” by including the limitation “wherein the temporary fastener is configured to release at least a portion of the temporary

³ See PTO, *Message from Chief Judge James Donald Smith, Board of Patent Appeals and Interferences: USPTO Discusses Key Aspects of New Administrative Patent Trials*, available at <https://shorturl.at/0YDBt> (last visited Sept. 24, 2025) (“Comparing the two standards, the ‘reasonable likelihood’ standard is lower than the ‘more likely than not’ standard.”).

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.” Petition at 32–33. However, as Petitioner reluctantly concedes in a footnote, “[i]n response to the *Halliburton* decision, Congress enacted what is now Section 112(f), which permits functional claiming using limitations that recite a ‘means for’ performing a recited function, but which limits the claim scope to the corresponding structure disclosed in the specification and equivalents.” Petition at 34 n.5 (citing *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 27–28 (1997)).

Thus, even if Claim 6’s “configured to release” limitation truly is a functional limitation, nevertheless Claim 6 is not indefinite because, when read in view of the specification and prosecution history, it informs a POSA of the claimed invention’s scope. The ’781 patent discloses numerous embodiments with structures that correspond to this limitation, including at least (1) a single-piece temporary fastener with what the Petition calls a reverse buttress thread, (2) a single-piece temporary fastener with a buttress thread, (3) a single-piece temporary fastener with an interference fit, and (4) a single-piece temporary fastener with symmetrical threads. Leinsing Decl. ¶¶ 87–90.

Every single embodiment disclosed satisfies this release limitation. Leinsing Decl. ¶ 90. Indeed, the release function is one of the key advantages of the claimed invention; it is what leads to significant efficiency gains in the pick-up processing and denture conversion more generally. Leinsing Decl. ¶ 90. In short, the structures disclosed all teach different structures that satisfy the release limitation. Under § 112(f), such a claim is not indefinite.

2. “Does Not Essentially Match” (Claims 10–16) Is Not Indefinite.

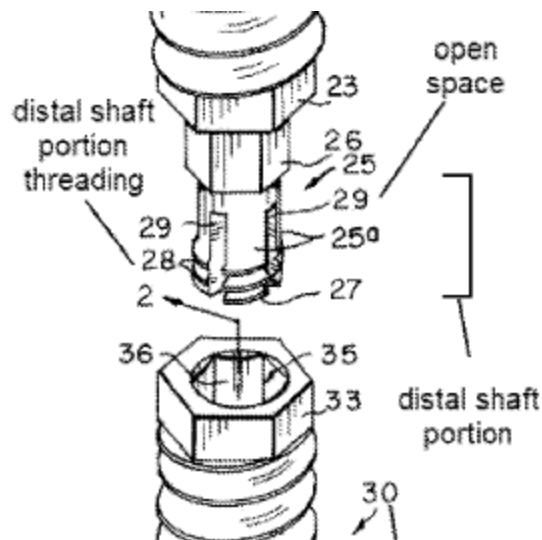
Petitioner next argues that the “does not essentially match” limitation in Claims 10–16 is likewise indefinite. Petition at 35–40. However, for some “terms like, for example, terms of degree, specific and unequivocal examples may be sufficient to provide a skilled artisan with clear notice of what is claimed.” *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1260 (Fed. Cir. 2014). The Federal Circuit has previously found the phrase “not interfering substantially” to be sufficiently definite claim language. *Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1334–35 (Fed. Cir. 2010).

The specification’s explicit definition, combined with the prosecution history, sufficiently provide a POSA with clear notice of the invention’s scope. As the Petition reluctantly acknowledges (at 35), the ’781 patent specification defines “essentially” as equivalent to “about,” both of which also “mean ± 10 percent.” Pet. Ex. 1001, at 33. A POSA would understand that a screw’s threading contour can be

described and measured using one or more well-known properties, such as pitch, pitch angle, thread diameter, proximal thread angle, and distal thread angle.

Leinsing Decl. ¶ 94. A POSA would also understand that whether a screw's threading matches female threading can be described and quantified by examining the contact area between the threading, or using the volume of the female threads filled by the male threads. Leinsing Decl. ¶ 94. And a POSA would likewise understand that the definition for "essentially" meant that a difference of 10 percent in these properties would mean the thread contours do not essentially match.

The prosecution history gives helpful examples on how to apply the straightforward definition to different threading configurations. In an office action, the examiner explained that "Berrevoets teaches an apparatus ... wherein the shaft threading contour does not essentially match the implant threads contour," as shown in "Figs. 1-3." Pet. Ex. 1020, at 940. The examiner included an annotated version of Berrevoets' Figure 1.



Pet. Ex. 1020, at 934. The fastener threads do not essentially match the implant's threading, for example, because of (1) the slot 29, and (2) what the examiner labeled the Figure 1 fastener's "open space," which left empty space in the female threading. Both of these meant that the surface area (or volume) of the male threading differed from the surface area (or volume) of the female threading by more than ± 10 percent, and therefore did not essentially match. Leinsing Decl. ¶ 97.

Furthermore, the examiner noted, "Lannan does not disclose" a configuration "wherein the shaft threading contour does not essentially match the implant threads contour." EX1020, at 939–940. In other words, Lannan's configuration *did* essentially match the implant threads. The shaft threading contour and the implant threading that it essentially matched are indicated with the yellow outline in the figure below.

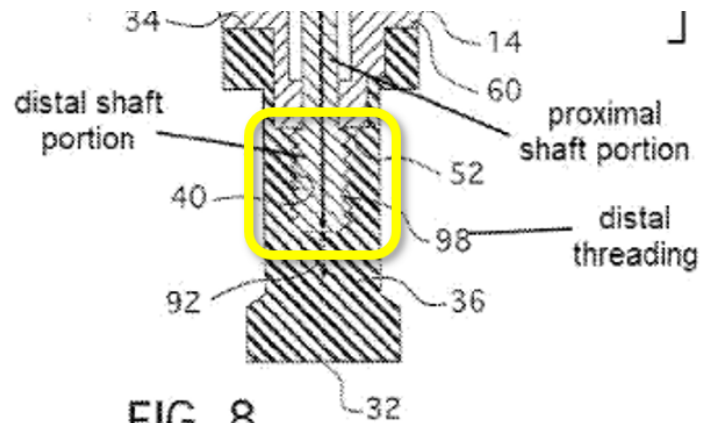
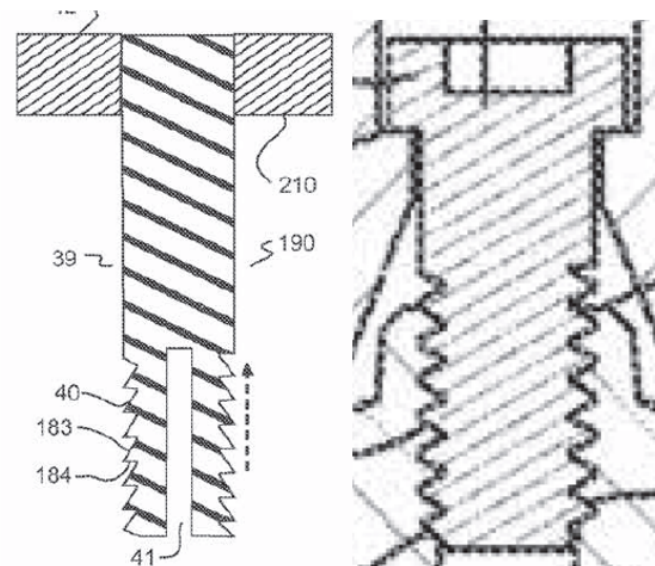


FIG. 8
(Lannan, annotated)

EX1020, at 932 (annotation added).

The relevant differences between Lannan and Berrevoets are readily apparent to a POSA. Lannan’s fastener threads filled all the volume of all the female threads, without any empty threading. Berrevoets’ fastener threads did not and left both empty threading *above* the fastener’s threads, as well as areas of empty threading because of the fastener’s slots. Leinsing Decl. ¶¶ 97–98.

These are not difficult concepts for a POSA to understand. Indeed, engineering and manufacturing specifications commonly include fit requirements that are similar in function to this “essentially match” limitation. Leinsing Decl. ¶¶ 82, 99. Thus, Petitioner is wrong to suggest that “[t]he specification ... does not explain whether or not the thread contour of asymmetric threads 40 of the temporary fastener of Figure 75 ‘essentially match[es]’ the thread contour of symmetric threads 18 of implant abutment 8 of Figure 9.” Petition at 36.



Pet. Ex. 1001, at 7, 25.

These figures readily show that the pitch angle, proximal thread angle, and distal thread angle of the temporary fastener differs from those of the definitive screw by more than ten percent. Under the specification's definition, therefore, the male thread contour does not essentially match the female thread contour.

Because Claims 6 and 10, "read in light of the specification delineating the patent, and the prosecution history," inform a POSA "with reasonable certainty ... about the scope of the invention," they are therefore not indefinite. *Nautilus*, 572 U.S. at 901.

B. Ground 2: The Specifications And Disclosures Support And Enable Claims 1–16

Ground 2 argues that the specifications and disclosure are inadequate to support the '781 patent's claims. Petition at 40–49. But Petitioner is incorrect as to

both the thread-pattern limitations as well as the release limitations. And it has not carried its “burden from the onset to show with particularity why the patent it challenges is unpatentable,” including on this point. *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016).

1. The ’781 Patent’s Specifications Support And Enable Independent Claims 1, 6, 8 And 10

Petitioner’s argument that the specification does not enable the claims depends on the unsound notion that the specification disclosed *only a single embodiment* of a one-piece temporary fastener—the one shown in Figure 75. *See* Petition at 41 (“The ’781 patent specification does not support this broad claim scope because it describes only one temporary fastener embodiment . . .”).

That is demonstrably incorrect. The specification discloses the same multiple embodiments of the temporary fastener and therefore supports and enables the claims’ scope. “[I]psis verbis disclosure is not necessary to satisfy the written description requirement of section 112. Instead, the disclosure need only reasonably convey to persons skilled in the art that the inventor had possession of the subject matter in question.” *Fujikawa v. Wattanasin*, 93 F.3d 1559, 1570 (Fed. Cir. 1996). “One does that by such descriptive means as words, structures, figures, diagrams, formulas, etc., that fully set forth the claimed invention.” *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997); *see also Eiselstein v. Frank*, 52 F.3d 1035, 1038 (Fed. Cir. 1995) (“[T]he prior application need not

describe the claimed subject matter in exactly the same terms as used in the claims”).

a. The Specification Supports The Full Scope Of The Thread Pattern/Profile Limitations

The Petition incorrectly argues that the ’781 patent specification “describes only one temporary fastener embodiment with a different thread pattern: the temporary fastener of Figure 75 with an ‘asymmetric’ buttress thread that is different than the symmetric thread of the definitive screw and the implant abutment of Figure 9.” Petition at 41. To make this assertion, the Petition necessarily ignores the specification’s written disclosures and unduly restricts its analysis to Figure 75. That is improper.

The specification makes clear that “[t]he inventive concepts disclosed are not meant to be restricted to a temporary attachment post with standard screws that both engage and disengage the threads in the implant abutment through rotations.” Pet. Ex. 1001, at 41. For example, Figure 75 discloses “*a* temporary screw embodiment” that allows “axial separation without unscrewing the post threads.” Pet. Ex. 1001, at 35 (emphasis added); *id.* at 33 (“The terms ‘a’ or ‘an’, as used herein, are defined as one or as more than one.”).

The specification also explains that “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,” Pet. Ex. 1001, at 41—what the

Petition would call a reverse buttress thread instead of a buttress thread.

“Alternative approaches for engaging a temporary attachment post with abutment threads through axial insertion without rotation are considered to be part of this disclosure.” Pet. Ex. 1001, at 41. The disclosure also includes “an interference fit between the bottom of the post with the threads.” Pet. Ex. 1001, at 41. And, of course, the specification itself states that the drawings are not the sole embodiments disclosed: “[T]he drawings featured in the figures,” including Figure 75, “are for the purpose of illustrating certain convenient embodiments of the present invention and are not to be considered as limitation thereto.” Pet. Ex. 1001, at 33; *id.* at 42 (“Various embodiments have been described to illustrate the disclosed inventive concepts, not to limit the invention.”); *see also* Leinsing Decl. ¶¶ 108–123.

To argue—despite these disclosures—that Figure 75 is the sole embodiment of a single-piece temporary fastener disclosed, the Petition fixates on the drawings alone and essentially ignores the written descriptions. That approach, however, is conceptually incorrect; “descriptive means” like “words” can “fully set forth the claimed invention” just as well as “structures, figures,” and “diagrams.” *Lockwood*, 107 F.3d at 1572. Petitioner’s preferred approach is also inconsistent with the specification itself, which explicitly warns that the drawings **do not** limit the invention. *See* Pet. Ex. 1001, at 33, 42. Perhaps most strikingly, the Petition’s

narrow drawings-only approach is also internally inconsistent. The Petition is much more generous with prior art disclosures:

Bernhard *discloses* a variety of “provisional connection features” that uses one or more slots, grooves, recesses, holes, protrusions, ribs, dimples, bosses, pins, dowels, springs, clips, washers, fingers or a “bayonet mounting structure,” which temporarily snap-fit or friction-fit together to temporarily connect the coping to the abutment. Bernhard *also discloses* that “the provisional connection feature 126 can be located either entirely or partially along an interior surface of a bore, such as bore 125, of abutment 120.”

Petition at 12 (emphasis added) (citations omitted). The Bernhard figures referenced, however, depict only a small subset of these provisional connection features: protrusions, slots, and recesses (Figures 1, 13, 15, 17), springs (Figure 8), and fingers (Figures 18, 21). None depicts “grooves,” “holes,” “ribs,” “dimples,” “bosses,” “pins,” “dowels,” “clips,” “washers,” or a “bayonet mounting structure”—those come from the written descriptions alone. Petition at 12. In short, Petitioner hopes to inconsistently interpret certain disclosures more broadly than others, depending on whether it helps Petitioner or not.

It is therefore not correct to argue that “[t]his case is analogous” to any of the cases the Petition uses for this point. *See* Petition at 45. In each of those cases,

the specification failed to disclose all of the embodiments claimed. *See Tronzo v. Biomet, Inc.*, 156 F.3d 1154, 1156, 1159 (Fed. Cir. 1998); *Synthes USA, LLC v. Spinal Kinetics, Inc.*, 734 F.3d 1332, 1344–45 (Fed. Cir. 2013); *Ex parte Deacon*, Appeal No. 2003-1272, 2005 WL 4755435, at *1 (BPAI June 2, 2005). That is not the case here.

The '781 patent specification here discloses more than just (1) a single-piece temporary fastener with what the Petition calls a reverse buttress thread; by its terms, it also *at least* includes (2) a single-piece temporary fastener with a buttress thread as well as (3) a single-piece temporary fastener with an interference fit and (4) a single-piece temporary fastener with symmetrical threads. A POSA would understand the disclosures this way. Leinsing Decl. ¶¶ 108–123.

b. The '781 Patent Specification Supports The Full Scope Of The Release Limitations

Furthermore, the specification makes clear that the disclosed embodiments include those without a “split post with deflecting legs,” as the Petition describes them. Petition at 46. The disclosure also includes (among other embodiments) those with “an interference fit between the bottom of the [temporary fastener] post with the [abutment] threads.” Pet. Ex. 1001, at 41. An interference fit involves mechanical friction that results from inserting one part into an opening of a second part in which the opening is approximately the same as, or smaller than, the first, sometimes involving the first part’s deformation.

Furthermore, the specification does not describe the split-post structure as critical to the invention's release limitations. To the contrary, it discloses using such a structure for both "axial extraction" as well as "axial insertion." Pet. Ex. 1001, at 41. And immediately after, it discloses using "an interference fit between the post of the post with the threads," which "[s]imilarly ... may also be designed to provide sufficient engagement to provide adequate alignment and fixing of the coping." Pet. Ex. 1001, at 41.

The '781 patent specification describes an "attachment post portion 39" with "a slot 41 and asymmetric threads or serrations 40." Pet. Ex. 1001, at 41. Limiting the description *only* to an embodiment with a slot and asymmetric threads, as Petitioner hopes to do, is inconsistent with the description's internal instructions. "The term 'or' as used herein is to be interpreted as an inclusive or meaning any one or any combination. Therefore, 'A, B or C' means any of the following: 'A; B; C; A and B; A and C; B and C; A, B, and C.'" Pet. Ex. 1001, at 33. Therefore, "a slot 41 and asymmetric threads or serrations 40" must be read to illustrate an attachment post portion (a) with only a slot, (b) with only asymmetric threads, (c) with only serrations, (c) with a slot and asymmetric threads, (d) with a slot and serrations, (e) with asymmetric threads and serrations, as well as (f) a slot, asymmetric threads, and serrations.

For these reasons, the *specification discloses many more embodiments than the single one on which the Petition fixates*. That broad disclosure means the cases relied on are distinguishable as well. *See* Petition at 48–49. In those cases, the disclosures disclosed only a single embodiment of a claimed invention and so did not support claims that covered additional embodiments. *See ICU Med., Inc. v. Alaris Med. Sys., Inc.*, 558 F.3d 1368, 1378 (Fed. Cir. 2009); *D Three Enters., LLC v. SunModo Corp.*, 890 F.3d 1042, 1051–52 (Fed. Cir. 2018); *Anascape, Ltd. v. Nintendo of Am., Inc.*, 601 F.3d 1333, 1340 (Fed. Cir. 2010); *Ex parte Gunaratnam*, Appeal No. 2016-006720, 2017 WL 5499118, at *1 (PTAB Oct. 26, 2017); *Ex parte Vargas*, Appeal No. 2006-3416, 2007 WL 2823700, at *1 (BPAI Sept. 13, 2007); *Liebel-Flarsheim Co. v. Medrad, Inc.*, 481 F.3d 1371, 1378–1379 (Fed. Cir. 2007). The same is not true here; a POSA would understand the disclosures to cover numerous embodiments. Leinsing Decl. ¶¶ 124–132. Properly interpreted, the specification adequately enables the full scope of the '781 patent's claims.

2. The Specification Supports Dependent Claims 2–5, 7, 9 And 11–16

As explained above, the specification adequately enables the full scope of the '781 patent's claims. For those same reasons, they adequately enable dependent claims 2–5, 7, 9 and 11–16 as well. None of Petitioner's scattershot additional arguments prove otherwise.

a. The Full Scope Of The Different Thread Pattern Limitations In Claims 2, 15 And 16 Are Supported

The Petition argues that Claim 2 “is not described or enabled because it encompasses many undisclosed asymmetric temporary fastener threads, including reverse buttress threads.” Petition at 50. But as explained above, the specification discloses many more embodiments than the single one on which the Petition fixates—including, specifically, what the Petition calls a “reverse buttress thread.” *See* Pet. Ex. 1001, at 41 (“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”). A POSA would have understood the disclosures this way. Leinsing Decl. ¶¶ 108–123. The same is true for Claims 15 and 16.

b. The Full Scope Of The Release Limitations In Claims 2–5, 11–13 And 15–16 Is Supported

Petitioner argues next that these claims’ release limitations are not supported because they “add limitations that do not require the temporary fastener to have a split-post structure with deflecting legs that permit the fastener to be pulled out without being unscrewed.” Petition at 56. The premise of this argument is incorrect: as explained above, the ’781 patent specification discloses more embodiments than just a split-post structure with deflecting legs. And a POSA would have understood the disclosures this way. Leinsing Decl. ¶¶ 124–132. Since

the specification discloses multiple embodiments, this is not a basis to find the claims are unsupported.

c. The “Securing The Coping To The Threads of the Implant Abutment” Limitation (Claims 1–9) Is Supported

The Petition argues next that Claims 1–9 are not supported because “[a]lthough the disclosed definitive screw threads secure the coping to the abutment, the definitive screw threads do not secure the coping to the threads of the abutment as recited.” Petition at 53. A POSA would not have such a hyper-technical understanding. Leinsing Decl. ¶¶ 135–137. The ’781 patent’s temporary fasteners are novel (in part) *because* they secure the coping to the abutment using the *same abutment threading* that the definitive screw will ultimately use.

Compare, for example, Bernhard’s fastener, which uses a snap-fit mechanism integrated into the coping itself to grip the proximal end of the abutment. *See* Pet. Ex. 1003, at 7. One could accurately say that Bernhard’s fastener secures the coping *either* to the abutment (generally) or to the abutment’s proximal end (specifically). Similarly, the ’781 patent specification discloses a temporary fastener that secures the coping to the abutment *by* securing the coping to the abutment’s threads. *See* Pet. Ex. 1001, at 25–28.

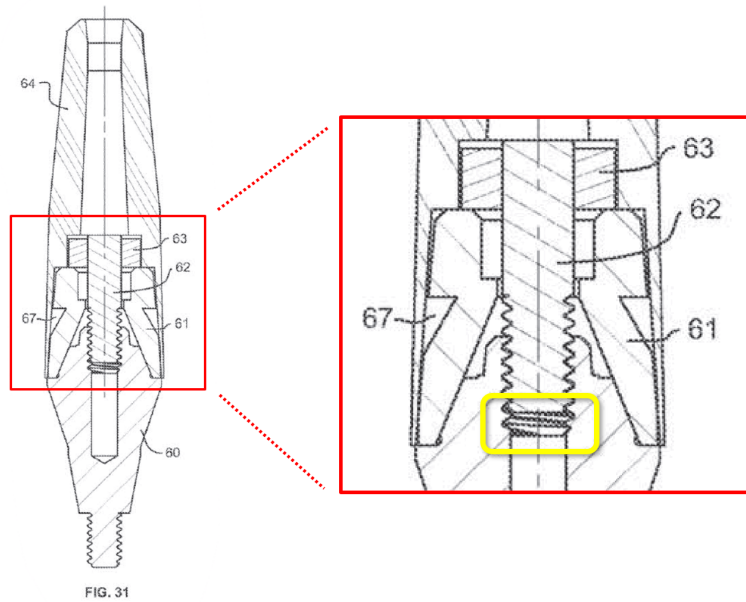
Using Petitioner’s logic, one could not accurately say that a belt holds up pants; one could say only that a belt holds up belt loops, which hold up the pants.

Nor would it be correct, using this logic, to speak of tying a boat to a dock; the boat is instead secured to a rope, which is secured to a metal cleat, which is secured to a dock. No ordinary person talks this way. No POSA does either. *See* Leinsing Decl. ¶¶ 135–137.

d. The “Does Not Engage The Implant Abutment Threads Continuously” Limitation (Claims 1–9) Is Supported

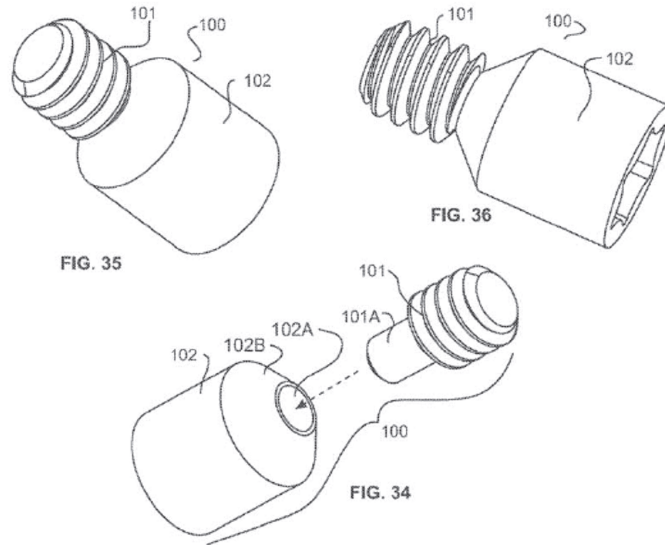
Next, the Petition argues that Claims 1–9 are unsupported because the specification “does not adequately describe or enable the ‘does not engage the implant abutment threads continuously’ limitation.” Petition at 54. “Patent Owner alleges that Petitioner’s NeoConvert ‘Pin Capture’ device satisfies this limitation ... on the ground that the device’s threads are threaded into only a portion of the abutment threads, such that abutment threads above and below the device threads are not engaged by the device threads.” Petition at 54. But these claims are unsupported, Petitioner argues, because the specification “does not describe any temporary fastener with continuous threads that are threaded into only a portion of the abutment threads, leaving abutment threads above and/or below the temporary fastener empty.” Petition at 56.

The specification on its face disproves that. Figure 31 depicts precisely such an embodiment, with the yellow-outlined portion being (in Petitioner’s words) “abutment threads ... below the temporary fastener” left “empty.”

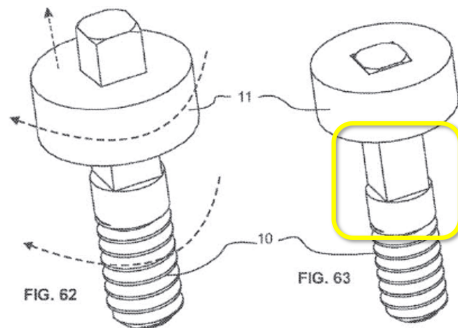


Pet. Ex. 1001, at 13 (annotations added). Figures 82–90 show additional embodiments with abutment threads left empty below the temporary fastener. Pet. Ex. 1001, at 27–28.

Furthermore, several embodiments leave abutment threads above the temporary fastener's threading empty as well. Figures 34 through 36 show a temporary fastener with a proximal post portion 101A with a total diameter that is smaller than the diameter of its threads 101, which allows the temporary fastener to be screwed farther into the implant abutment, until the proximal end of the temporary fastener's threads have passed the proximal end of the implant abutment's threading.



Pet. Ex. 1001, at 14. Figures 62 and 63 show that in certain embodiments the cap moves upward as the fastener is screwed farther into the abutment.



Pet. Ex. 1001, at 23 (annotation added). The portion outlined in yellow above, if configured like the smaller-diameter post of Figure 34, would therefore leave abutment threading empty above the temporary fastener’s threads. *See* Pet. Ex. 1001, at 33 (“Furthermore, the particular features, structures, or characteristics may be combined in any suitable manner in one or more embodiments without limitation.”).

Petitioner is therefore not correct; the specification describes multiple temporary fasteners “with continuous threads that are threaded into only a portion of the abutment threads, leaving abutment threads above and/or below the temporary fastener empty.” Petition at 56. A POSA would have understood the disclosures this way. Leinsing Decl. ¶¶ 138–144.

e. The “Outer Surface ... Deform” Limitation (Claim 5) Is Adequately Supported

The Petitioner also argues that Claim 5’s “Outer Surface ... Deform” Limitation is not supported because the specification “does not describe any temporary fastener that has an ‘outer surface’ that ‘deform[s]’ when the coping and the temporary fastener are pulled out of the abutment without being unscrewed.” Petition at 57. Wrong again. The specification discloses a temporary fastener that uses “an interference fit between the bottom of the post with the threads,” which “[s]imilarly ... may also be designed to provide sufficient engagement to provide adequate alignment and fixing of the coping.” Pet. Ex. 1001, at 41.

A temporary fastener with such an interference fit, a POSA would understand, would need to be made of a polymeric material like PEEK or acetal so that the interference fit would not alter the female threading in the implant abutment, which would degrade the permanent screw’s function. Axial extraction without degrading the permanent screw’s function is one of the *key advantages of all embodiments* of the disclosed invention. The post and thread diameter would

need to be large enough to provide the interference fit but shallow enough to deform (whether elastically or inelastically) and release. Leinsing Decl. ¶¶ 147–148. Pressing a polymeric post into the abutment’s female threading, inserting it by rotating it in, or pulling it out will all result in the polymeric post’s outer surface being deformed. Leinsing Decl. ¶ 148. Even without threading before insertion, a polymeric post within the range for the materials for an interference fit will inherently provide some level of thread formation—even if through temporary elastic deformation—on the post’s outer surface that minimally fills the open volume of the female threading. Leinsing Decl. ¶ 148. A POSA would understand the specification to refer to such a temporary fastener. Leinsing Decl. ¶¶ 147–149. Simply put, there cannot be any interference fit without the temporary fastener’s deformation.

f. The “Wherein The Temporary Fastener Is Configured To Release” Limitation (Claim 6) Is Adequately Supported

Petitioner next argues that the ’781 patent specification does not support or enable Claim 6’s “wherein the temporary fastener is configured to release” limitation. Petition at 58. However, the Petition truncates the quoted limitation, the full language of which is “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.” Pet. Ex. 1001, at 42–43 (emphasis added). Every single

embodiment the specification discloses meets this limitation; it is one of the patented invention's key advantages. And as explained above, that includes *at least* the following embodiments: (1) a single-piece temporary fastener with what the Petition calls a reverse buttress thread; (2) a single-piece temporary fastener with a buttress thread; (3) a single-piece temporary fastener with an interference fit; and (4) a single-piece temporary fastener with symmetrical threads. A POSA would understand the specification to disclose at least these embodiments. Leinsing Decl. ¶¶ 150–152. For this reason, the two cases the Petition relies on are inapposite. *See Ex parte Miyazaki*, No. 2007-3300, 2008 WL 5105055, at *10–14 (BPAI Nov. 19, 2008) (precedential); *Ex parte Wang*, No. 2012-001318, 2014 WL 1005328, at *2 (PTAB Jan. 9, 2014).

Thus, even assuming for argument's sake that this is a “purely functional” limitation, the specification adequately supports its scope.

**g. The “Distal ... Shaft Configured To Deform”
Limitation (Claim 14) Is Adequately Supported**

The Petition next argues that Claim 14's “Configured to Deform” limitation is inadequately supported because the specification does not “describe any temporary fastener that can be pulled out of the abutment without being unscrewed because its threads detach.” Petition at 60–61. This is a red herring. For one thing, the illustration Petitioner provides for this point does not show the threads completely separated from the fastener's post; they are shown still attached.



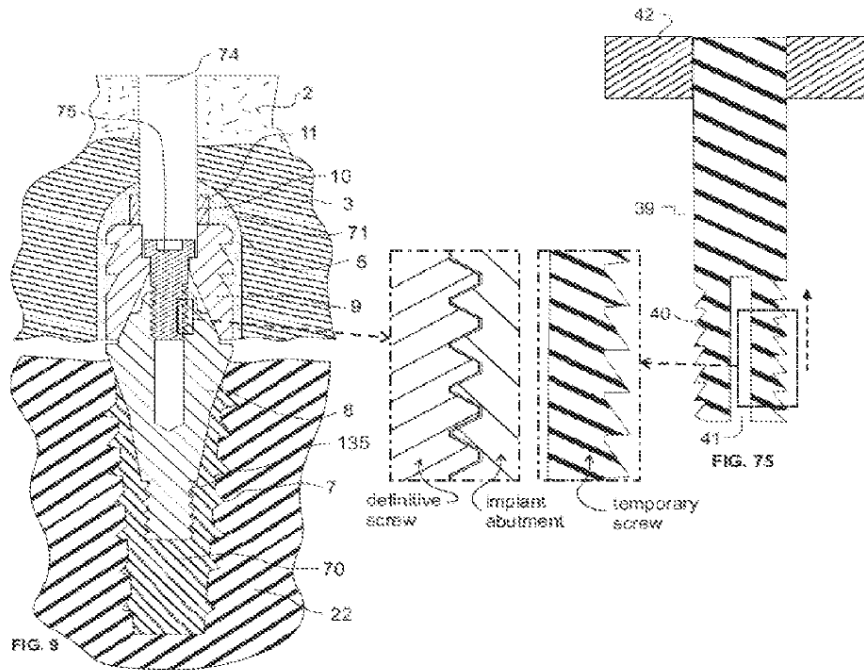
Petition at 61. Regardless, a POSA would understand deformation to inherently include detachment; detachment is inelastic deformation. The specification discusses “elastic and inelastically deforming retention elements” as well as “fracturing structures” as illustrative mechanisms for attaching and/or releasing a two-piece fastener’s post to its cap. Pet. Ex. 1001, at 32, 36. A POSA would understand that these same characteristics or features could be used to attach and/or release the temporary fastener post to the implant abutment threading. Leinsing Decl. ¶¶ 153–155; *see* Pet. Ex. 1001, at 33 (“Furthermore, the particular features, structures, or characteristics may be combined in any suitable manner in or more embodiments without limitation.”).

h. The “Smaller Maximal Width” Limitation (Claim 15) Is Supported

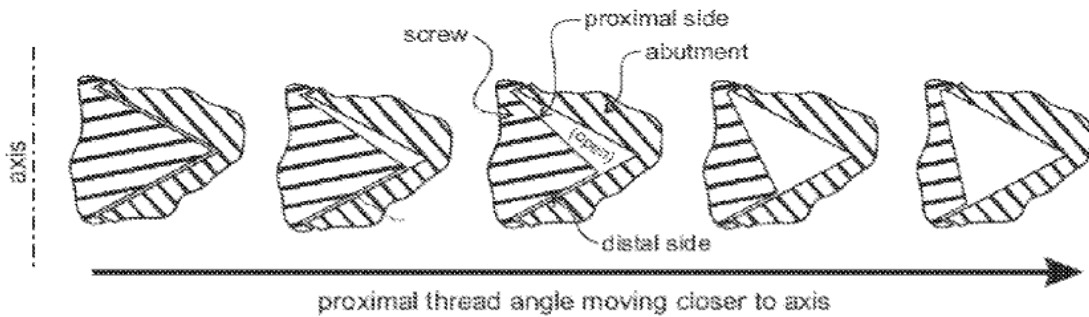
The Petition next argues that Claim 15 is unsupported because the specification “does not describe any temporary fastener that can be pulled out without being unscrewed in which the distal portion of the shaft has a maximal width that is smaller than the maximal width of the definitive screw threads.” Petition at 62. “If anything,” Petitioner says, “the thread peaks of the temporary fastener and the definitive screw appear to have the same diameter as the proximal unthreaded portion of the shaft.” Petition at 62.

Inherent geometry shows that the temporary screw in Figure 75 could not possibly have the same thread diameter as the permanent screw; it would not screw into the abutment if it did. Materials submitted during the parent ’992 patent’s prosecution—when the examiner requested information on a similar point⁴—show this clearly:

⁴ See Pet. Ex. 1015, at 208–209 (office action indicating that “the specification appears to lack proper antecedent basis for ‘wherein the width of the threaded region of the temporary screw shaft is smaller than the width of the threaded region of the definitive screw post’ in lines 2–3” because “[t]he specification does not appear to provide such a description, and elected Fig. 75 does not appear to show the width of the threaded region of the temporary screw shaft is smaller than the



Pet. Ex. 1015, at 296.



Pet. Ex. 1015, at 297. If a temporary screw with the proximal thread angle shown in the three examples to the right of the above illustration had the same diameter as a permanent screw with the proximal thread angle shown on the far left, the

width of the threaded region of the definitive screw post”); *see id.* at 209 (similar objection for claim 27 in '730 application).

temporary screw would not fit into the abutment threads. A POSA would have easily understood all this. Leinsing Decl. ¶¶ 123–128.

C. Ground 3: Claims 10, 12, 15 and 16 Were Not Obvious Based On Bernhard In View Of Poovey And Gracco

“[O]bviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated* to make the combinations or modifications of prior art to arrive at the claimed invention.” *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (emphasis added). To show obviousness, “[t]he invention must be viewed not with the blueprint drawn by the inventor, but in the state of the art that existed at the time.” *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1138 (Fed. Cir. 1985). Petitioner must therefore put forward some “explanation as to how or why the references would be combined to arrive at the claimed invention”; otherwise, “hindsight bias” is “the thread that stitches together prior art patches into something that is the claimed invention.” *Metalcraft of Mayville, Inc. v. The Toro Co.*, 848 F.3d 1358, 1367 (Fed. Cir. 2017).

Petitioner argues that “it would have been obvious in view of Bernhard, Poovey[] and Gracco to modify the system of Figures 8–12 of Bernhard to [1] temporarily connect coping 700 to abutment 650 [2] with a temporary screw [3] with flexible threads [4] in a buttress thread pattern, which [5] would be threaded into bore 654 but [6] pulled out of abutment 650 [7] without being unscrewed when the prosthesis is removed.” Petition at 65. Even ignoring the

impracticality of these modifications (explained below), the Petition's many hypothetical modifications and combinations would have been inventive, not merely obvious. The Petition postulates a motivation, arguing that a POSA would have been motivated to do so to "make the temporary connection ... more secure, reliable and stable than a snap-fit mechanism," and because this solution "would be simpler." Petition at 65–66.

Furthermore, such a combination would not have "a reasonable expectation of success" and so cannot support an obviousness argument. *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). "[C]oat[ing]" metal or plastic threads "with a heat labile plastic or silicone" as Poovey teaches, Pet. Ex. 1005, at 12, is not practical for the extraordinarily small screws used in dental implants. Silicone coating on the threads would prevent or impede the initial screw insertion.

Leinsing Decl. ¶ 167. Finally, using heat as a means of releasing the "impression coping securing screw" from the implant is impractical. Heating the screw to the temperature necessary to "dissolve or soften the plastic or silicone sufficiently to allow removal ... without unscrewing the impression coping security screw," Pet. Ex. 1005, at 12, would be unworkable in a clinical setting and perhaps even painful for the patient. Leinsing Decl. ¶ 168. That is especially true because all temporary screws holding the prosthesis would need to be heated simultaneously to successfully carry out pick-up processing. Leinsing Decl. ¶ 168. Thus, this

combination would not be obvious to a POSA at least because it would not have a reasonable chance of success. Leinsing Decl. ¶ 169.

To the contrary, what *is* obvious is that the relevant prior art in 2018 did not teach or suggest the claimed invention. Because the prior art is insufficient, Petitioner relies heavily on the Brunski declaration—in an attempt to back-fill multiple fatal gaps in the prior art.

D. Ground 4: Claims 1–9, 11, 13 And 14 Would Not Have Been Obvious Based On Bernhard In View Of Poovey, Gracco And Derey

Ground 4 relies on similar obviousness arguments as Ground 3. “[I]t would have been obvious to modify Bernhard’s system in view of Poovey and Gracco to use a temporary screw based on the design of threaded fastener 750 but with flexible buttress threads,” Petitioner argues. Petition at 83. For the same reasons explained above as to Ground 3, that is not the case because such a combination would not have a reasonable expectation of success.

Petitioner further argues that “[b]ased on Derey, a POSA would have been motivated to design the temporary fastener to have a slot to create a split-post structure with deflecting legs.” Petition at 85. But the deflecting legs in Derey are not relevant to the invention described in Claims 1–9, 11, 13 and 14 because Derey is a snap-in system, not a screw-in system. (The references submitted in the IDS disclosed numerous embodiments of snap-in systems, which the examiner

considered. *See* Pet. Ex. 1003, at 1; Ex. 2012, at 76; Ex. 2013, at 13, 26; Ex. 2014, at 1–2.) It therefore would not have had a reasonable expectation of success because it would not generate the benefits that the claimed invention creates: stability, torquing ability, and resulting fit for the prostheses far superior to what a snap-in system can offer, minus the added bulkiness of snap-in equipment.

Leinsing Decl. ¶¶ 172–173.

VI. OBJECTIVE EVIDENCE OF NON-OBVIOUSNESS / SECONDARY CONSIDERATIONS

“The obviousness determination turns on underlying factual inquiries involving: (1) the scope and content of prior art, (2) differences between claims and prior art, (3) the level of ordinary skill in pertinent art, and (4) secondary considerations such as commercial success and satisfaction of a long-felt need.” *Procter & Gamble Co. v. Teva Pharms. USA, Inc.*, 566 F.3d 989, 994 (Fed. Cir. 2009). These secondary considerations confirm the non-obviousness arguments above.

Petitioner’s NeoConvert systems and components, which infringe the ’781 patent, have enjoyed significant commercial success in the short time since their launch in Q1 2024. Because of Petitioner’s pricing strategy, Petitioner has succeeded in capturing many of Patent Owner’s customers. Furthermore, the commercial success of Patent Owner’s products—NeoConvert’s only competitors—supports the non-obviousness of alternate embodiments of the

inventions. As one dental practitioner said in August 2023, “this thing has exploded.”⁵

The long-felt need for these inventions supports their non-obviousness as well. Conventional conversion procedures have been in use for decades; they typically require two hours to complete and often require multiple attempts to achieve occlusion and comfort for the patient. Ex. 2011, at 3 (“the traditional two hours”). The inventions underlying Patent Owner’s Smart Denture Conversions technology and Petitioner’s NeoConvert systems allow conversions to be done in 30 minutes. Ex. 2011, at 3 (“Processing time is just 30 MINUTES ... due to the provisional prosthesis being duplicated for the final. Overall treatment duration is significantly reduced.”). The result is a win-win for patients, who experience less time and discomfort in the dental chair, and for practitioners, who can treat more patients.

Patent Owner’s technology also results in a stronger prosthesis by allowing smaller holes to be drilled than in conventional conversions. Ex. 2011, at 3 (“Smaller pilot holes help reduce fractures by preserving the structural integrity of the prosthesis.”). The resulting prosthesis lasts longer and is less likely to fracture, delivering long-term value to patients. Ex. 2011, at 3 (“STRONGER”). Patent

⁵ Voices at 42:30–43:07.

Owner’s inventions allow practitioners to better position the denture in the mouth as compared to a conventional conversion procedure, resulting in a more functional, more comfortable, and better-looking end result. Ex. 2011, at 3 (“Better contours without the need to unnecessarily bulk the prosthesis. Better occlusion using a closed mouth pickup, reducing the need for occlusal adjustments.”). The embodiments in Patent Owner’s products (covered by Kofford, not at issue here) and in Petitioner’s NeoConvert products (covered by the ’992 patent) both enjoy these same benefits and advantages.

Dental practitioners have performed conventional conversion procedures for decades, during which time they experienced the same issues that led Dr. Kofford and Mr. Rudisill to invent and develop Patent Owner’s technology: long and uncomfortable procedures; a weaker resulting prosthesis with larger screw-holes; and uncomfortable, less-attractive end results. Despite encountering these issues *for decades*, however, no practitioner or inventor conceived of the technology claimed in the ’992 patent until 2016 (when Dr. Kofford first conceived the concept) and 2018 (when Dr. Kofford and Mr. Rudisill conceived of and reduced the concept to practice).⁶

⁶ See, e.g., Voices at 36:40–37:05 (“How did you *wrap your head around making a screw that’s breakable?* ... We spend our lives not wanting to break screws. ... I

Petitioner’s initial interest in potentially distributing Patent Owner’s products, including Patent Owner’s Separable Fastener, followed by Petitioner’s later attempts to design around SDC’s patent claims, likewise offer additional objective evidence that shows the ’781 patent’s technology was non-obvious. Petitioner and Patent Owner executed an NDA to examine Patent Owner’s technology before, months later, Petitioner decided to pursue its own product. Indeed, Petitioner’s decision to jump into a single-supplier market and introduce a product to compete head-to-head with Patent Owner belies their convenient assertion here that “any commercial success of or praise for [Patent Owner’s] ‘Separable Fastener’ device” is irrelevant “because it would have no nexus with claims 1–16.” Petition at 106. The success of Patent Owner’s Separable Fastener is precisely why Petitioner introduced NeoConvert; the two systems compete head-to-head and enjoy the same benefits and advantages.⁷

remember when the lab I’m at now showed me the video of these I’m looking at this thing, and I’m like, *wait a minute, did he just break that screw?* What the hell.” (emphasis added)).

⁷ Voices at 45:00–34 (dental practitioner observing, before Petitioner’s NeoConvert system entered the market, that dental-implant companies would “*all gonna be*

Furthermore, though Dr. Kofford and Mr. Rudisill expected the Patent Owner’s technology to improve conversion procedures, the technology and resulting products ultimately resulted in more significant gains in efficiency, comfort, and prosthesis strength than even the inventors initially anticipated—leading to greater commercial success than they anticipated as well.⁸ For these reasons, dental practitioners and patients have praised Patent Owner’s products and technology. On the *Voices from the Bench: A Dental Laboratory Podcast*, for example, a practitioner lauded the technology, saying that “at this point, I can’t imagine doing a conversion any other way.”⁹ “It’s a really neat system, that I can say, first hand, not only makes my job easier, but makes a better prosthetic, and also makes me look like a rock star.”¹⁰ The embodiments present in Petitioner’s

trying to copy this, I know it” and that copycats are “the way the implant industry works” (emphasis added)).

⁸ Voices at 42:00–43:00 (Dr. Kofford explaining that he initially developed the Patent Owner’s technology for his own practice and “had no idea that it would get going throughout the country”).

⁹ Voices at 6:20–31.

¹⁰ Voices at 7:05–7:20.

NeoConvert systems enjoy these same benefits and advantages—as they were intended to do.

Certain practitioners' initial skepticism of the Patent Owner's technology and process likewise supports the conclusion that these inventions were not obvious. After observing demonstrations, however, these Doubting Thomases were impressed by the Patent Owner's technology, expressed appreciation for its benefits, and ultimately became Patent Owner's customers.

VII. CONCLUSION

For at least the foregoing reasons, the Board should deny institution as to each of the four requested grounds.

Respectfully submitted,

Dated: September 25, 2025

By: /s/ Kelsey I. Nix
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Counsel for Patent Owner

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), the undersigned certifies that the foregoing Patent Owner’s Request for Discretionary Denial and Supporting Brief contains, as measured by the word-processing system used to prepare this paper, 10,336 words, which is within the 18,700-word limit set in 37 C.F.R. § 42.24(a)(1)(ii) and (b)(1). This word count does not include the items excluded by 37 C.F.R. § 42.24.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on September 25, 2025, I caused a true and correct copy of the foregoing Patent Owner’s Request for Discretionary Denial and Supporting Brief to be served via email on Petitioner at the following addresses:

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