

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

STRAUMANN USA, LLC,
Petitioner,

v.

SMART DENTURE CONVERSIONS, LLC,
Patent Owner.

IPR2025-00956
Patent 11,937,992

PATENT OWNER'S PRELIMINARY RESPONSE

August 29, 2025

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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 Sotera 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 Owners 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)
'992 patent	U.S. Patent No. 11,937,992 (Mar. 26, 2024)

I. INTRODUCTION

Pursuant to 37 C.F.R. § 42.107(a) and 35 U.S.C. § 313, Patent Owner submits this Preliminary Response to the Petition for *Inter Partes* Review of U.S. Patent No. 11,937,992 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 8), the Board should exercise its discretion under 35 U.S.C. § 325(d) to deny institution. Petitioner relies on the same or substantially the same prior art that was already considered by the examiner during the '992 patent's prosecution—yet fails to show that the examiner made any error material to the challenged claims' patentability. The Petition, in fact, does not even attempt to show material error.

Second, the Board should deny institution because Petitioner failed to show a reasonable likelihood that at least one of the challenged claims is unpatentable. 37 C.F.R. § 42.108(c); *see also* 35 U.S.C. § 314(a). Grounds 1, 2 and 3 are meritless because they rely on the false notion that Kofford—a parent patent to the '992 patent, by the same inventors—constitutes prior art. It does not. Grounds 4, 5, and 6 are also 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 in April 2024.¹

II. OVERVIEW OF THE '992 PATENT

The '992 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 2. “The disclosed temporary fasteners initially orient and hold a coping against an 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 2. “In this manner, the coping is held against the abutment for the pick-up process

¹ 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.

with a force oriented identically to that of the final screw mounting.” Pet. Ex. 1001, at 32. 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 ’992 patent underwent a thorough review during prosecution. 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 raises. *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.

Finally, Petitioner twice complains that “Patent Owner apparently drafted the claims to try to cover Petitioner’s device.” Petition at 2; *id.* at 28 (“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 seven prior-art references: Bernhard, Poovey, Gracco, Derey, Nino, Ruetschi and Kofford. For the reasons explained below, Kofford—the sole or key reference for Grounds 1, 2 and 3—is a parent to the ’992 patent, by the same inventors, and thus is not prior art. Petitioner’s argument that Kofford somehow qualifies as prior art here, therefore, necessitates a predicate 35 U.S.C. § 112 enablement analysis. As shown below, the challenged claims are fully supported by the priority applications.

Bernhard and Poovey—the centerpieces of Grounds 4, 5 and 6—were before the examiner during prosecution, and the challenged claims were already allowed over Bernhard and Poovey. These and the other four 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. 1013, 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 '992 patent's prosecution. The reference appears on the face of the '992 patent. Pet. Ex. 1001, at 3. Furthermore, Patent Owner identified Bernhard in a December 5, 2023 IDS submission, and the examiner marked it "considered" on January 17, 2024. Pet. Ex. 1015, at 762–773, 1072–1083

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" (not an abutment) "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 '992 patent's prosecution. The reference appears on the face of the '992 patent. Pet. Ex. 1001, at 3. Furthermore, Patent Owner identified Poovey in a December 5, 2023 IDS submission, and the examiner marked it "considered" on January 17, 2024. Pet. Ex. 1015, at 762–773, 1072–1083

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. 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 likely uncomfortable or even painful for the patient. Leinsing Decl. ¶¶ 54–55.

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. Ex. 1006, at 186–187. The screws in the experiment, however, were designed to cut into bone; they were "self-drilling and self-tapping, with a

cutting flute at their apex.” 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. ¶ 57. 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. ¶ 58.

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. The snap-in connector has two legs that separate to hold the element in the female threading of the implant or abutment. 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.

E. Nino

Nino is a 2011 patent that teaches a “torque-limiting driver that disengages at a predefined torque limit,” including in “the installation of dental ... implants.” Pet Ex. 1020, at 7, 9. Nino explained that “[t]orque-limiting drivers are widely used throughout the medical industry.” Pet. Ex. 1020, at 7. These drivers are either “[r]eusable” or “disposable.” Pet. Ex. 1020, at 7. “Reusable drivers require constant recalibration,” “a cumbersome task” that “must be done routinely.” Pet.

Ex. 1020, at 7. “Disposable drivers,” on the other hand, “are easy to use and reliable” but “have been used for low torque applications” only. Pet. Ex. 1020, at 7. Nino therefore described a disposable driver capable of high-torque applications. Pet. Ex. 1020, at 9.

F. Ruetschi

Ruetschi is a patent application (published Oct. 27, 1988) teaching the use of a torque-limiting driver in surgical procedures generally. Pet. Ex. 1022, at 1–3. Previous iterations of screwing tools, Ruetschi explained, were “difficult” to handle “due to the small dimensions of the handle,” particularly when loosening screws. Pet. Ex. 1022, at 2. Ruetschi’s driver therefore was “easy to handle” and “ensure[d] by simple means that, on the one hand, a maximum tightening torque is not exceeded and, on the other hand, a torque exceeding the maximum tightening torque can be exerted for release.” Pet. Ex. 1022, at 2.

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 a least three years of experience in the field, such as experience with the design of bone implants, anchors, and/or screws. Leinsing Decl. ¶ 35. 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. ¶ 35.

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 an IPR.

V. THE BOARD SHOULD DENY INSTITUTION UNDER 35 U.S.C. § 325(d).

In addition to the grounds for discretionary denial set forth in SDC's Request for Discretionary Denial and Supporting Brief (Paper 8), the Board should exercise its discretion to deny institution under 35 U.S.C. § 325(d)² as well. This analysis

² “[T]he Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.” 35 U.S.C. § 325(d).

uses a two-part framework: (1) “whether the same or substantially the same prior art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office,” and if so, (2) “whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.” *Advanced Bionics, LLC v. MED-EL*

Elektromedizinische Geräte GmbH, IPR2019-01469, 2020 WL 740292, at *3–4 (PTAB Feb. 13, 2020) (precedential) (citing *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, first paragraph)).

Petitioner relies on the same (Bernhard and Poovey) or substantially the same art that was considered by the examiner during the ’992 patent’s prosecution—yet fails to show that the examiner made any error material to the challenged claims’ patentability. Petitioner does not even attempt to show material error.

A. The Examiner Considered The Same Or Substantially The Same Prior Art During Prosecution

The Petition relies on both Bernhard and Poovey for its Grounds 4–6 obviousness arguments, and on Poovey for Ground 2 as well. Petition at 5–6. Bernhard and Poovey, however, were provided to and considered by the examiner during prosecution. Petitioner’s remaining references (Gracco, Derey and

Ruetschi) are substantially the same as other references the examiner considered.

These facts satisfy *Advanced Bionics* step one.

1. Patent Owner Disclosed, And The Examiner Considered, Bernhard And Poovey

“[P]reviously presented art includes art made of record ... such as on an [IDS].” *Biocon Pharma Ltd. v. Novartis Pharms. Corp.*, IPR2020-01263, 2021 WL 608300, at *4 (PTAB Feb. 16, 2021) (citing *Advanced Bionics*, 2020 WL 740292, at *3); *see also Mylan Pharms. Inc. v. Merck Sharp & Dohme Corp.*, IPR2020-00040, 2020 WL 2478503, at *6 (PTAB May 12, 2020) (same).

Both Bernhard and Poovey appear on the face of the '992 patent. Pet. Ex. 1001, at 3. Patent Owner cited both in a December 5, 2023 IDS submission, and the examiner marked the references “considered” on January 17, 2024. Pet. Ex. 1015, at 762–773, 1072–1083. *See Mylan*, 2020 WL 2478503, at *6 (“There is no dispute that WO '498 and '871 patent were identified in an IDS early in prosecution, and that the Examiner later signed that IDS.”). Both Bernhard and Poovey were thus previously presented to and considered by the examiner—a fact the Petition simply ignores.

2. The Examiner Considered Art Cumulative Of Petitioner’s Other References

Though the examiner did not consider Petitioner’s other references (Gracco, Derey, Nino and Ruetschi), they are merely cumulative of art the examiner

considered. These references “teach[] no more than what a reasonable examiner would consider to be taught by the prior art already before the PTO.” *Regeneron Pharms., Inc. v. Merus N.V.*, 864 F.3d 1343, 1350 (Fed. Cir. 2017); *see also Sonos, Inc. v. Google, LLC*, IPR2021-00963, 2021 WL 5195655, at *4 (PTAB Nov. 9, 2021) (“Accordingly, as Horn is applied in the Petition to the challenged claims in the same way as art previously presented to the Office, we determine that with regard to the Petition and the challenged claims that Horn is substantially the same as art previously presented to the Office.”).

a. Derey

Derey describes a snap-fit detachable fastener for dental implants. 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.

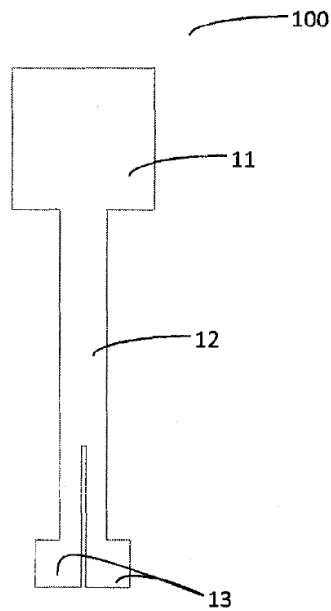


Fig. 5

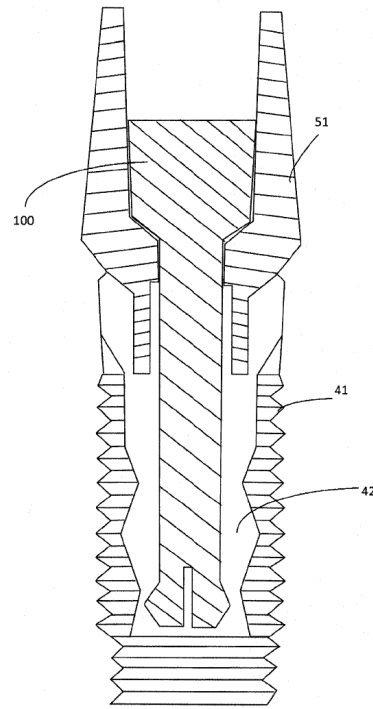


Fig. 6

Pet. Ex. 1008, at 18–19.

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:

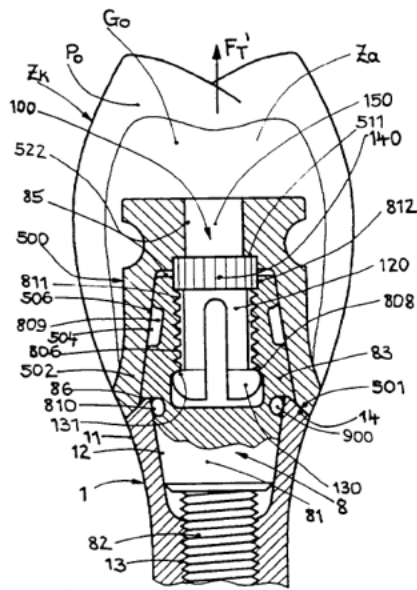


Fig. 19

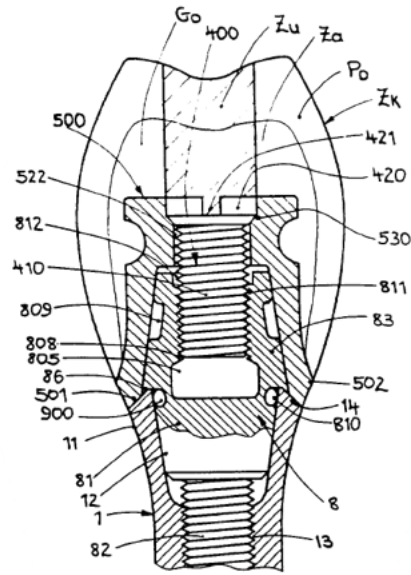
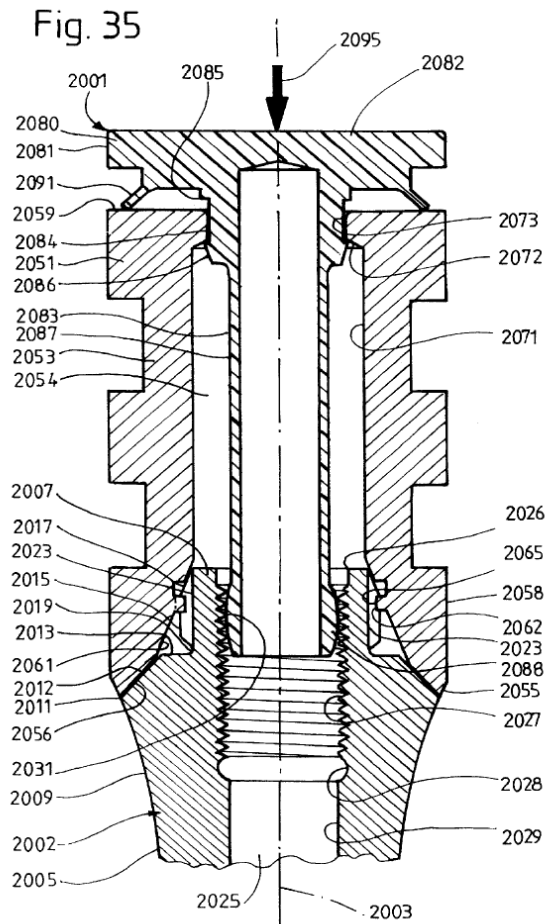


Fig. 20

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 January 2, 2024. Pet. Ex. 1015, at 1081, 1083.

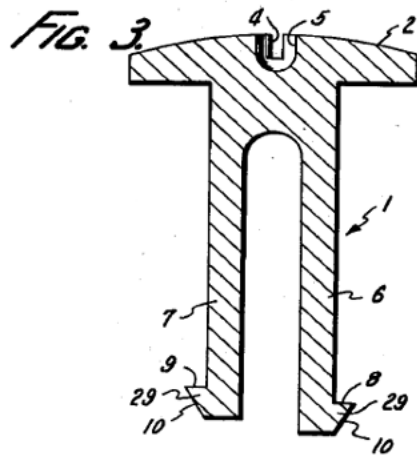
Sutter (2001)’s Figure 35 discloses a similar embodiment.



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.” Ex. 2013, at 27. Sutter (2001) was provided to the examiner in an IDS; she marked it “examined” on January 2, 2024. Pet. Ex. 1015, at 1073, 1083.

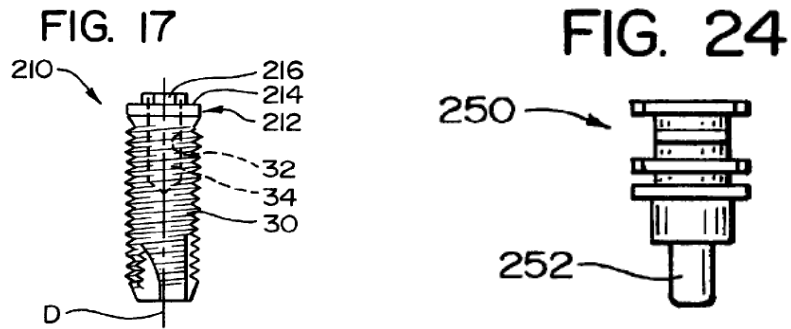
Johnson similarly discloses a push-in fastener with “two flexible legs or prongs” that “terminate in lips 29” that match the female threading of the base element. Ex. 2014, at 2.



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 January 2, 2024. Pet. Ex. 1015, at 1072, 1083.

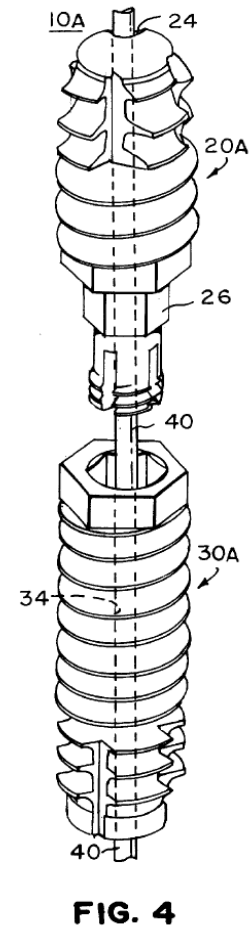
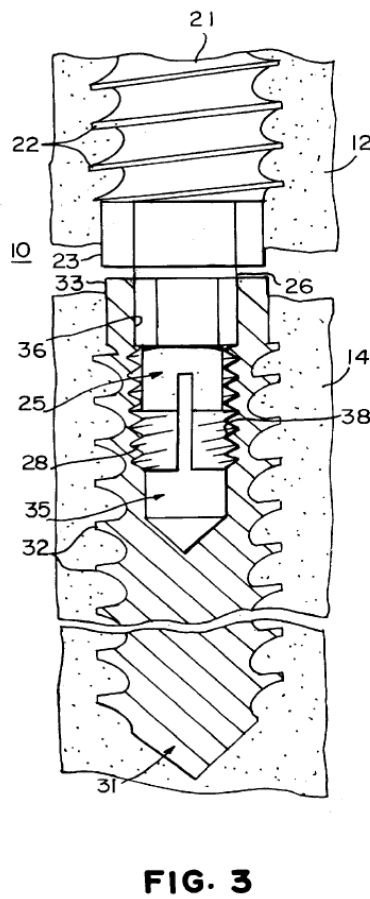
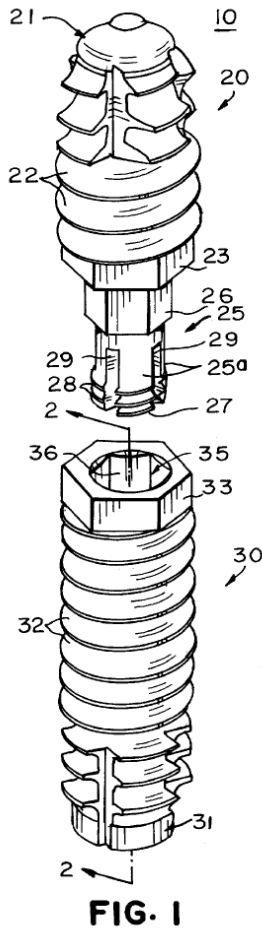
Prior art considered by the examiner also discloses temporary fasteners without a split-post structure that temporarily hold to the inside threading of a base element by friction fit. Wade’s Figure 24 discloses a “surgical impression feather” with “a lower post 252” that “enters the screw chamber 34 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 January 2, 2024. Pet. Ex. 1015, at 1077, 1083.

Prior art that the examiner herself identified (Berrevoets) discloses a split-bottom screw that matably threaded into a bone implant, rather than using a friction fit.



Ex. 2016, at 2–3. The examiner identified Berrevoets in her own independent prior-art searches; she rejected multiple claims for obviousness based on combinations of prior art that included Berrevoets. Pet. Ex. 1015, at 231–236, 238.

Finally, the '992 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 3. 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 32. 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 3.

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 79. 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,” *Regeneron*, 864 F.3d at 1350, including, specifically, Sutter (1996), Sutter (2001), Johnson, Wade, Berrevoets, and the discussion of prior art snap-fit systems included in the ’361 priority application itself. Leinsing Decl. ¶¶ 72–82. Derey is therefore cumulative.

b. Gracco

Gracco discusses “the effects of variations in thread shape on the axial pullout strength of orthodontic miniscrews.” Pet. Ex. 1006, at 3. 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 59. 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 'buttress threads':

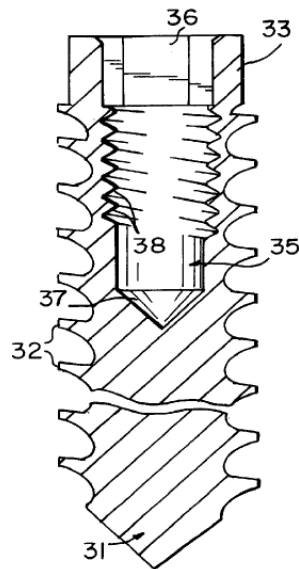


FIG. 2

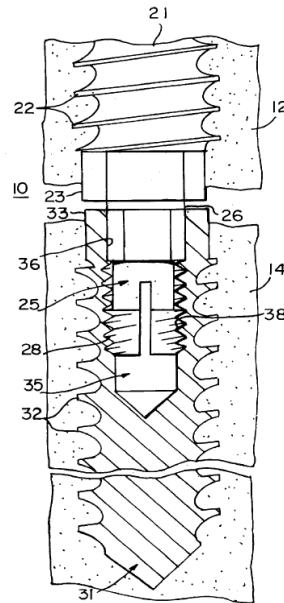
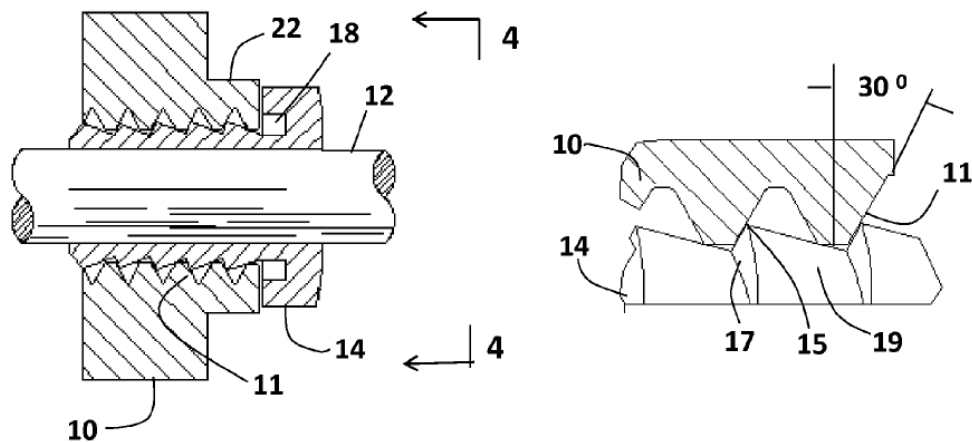


FIG. 3

Ex. 2016, at 2–3.

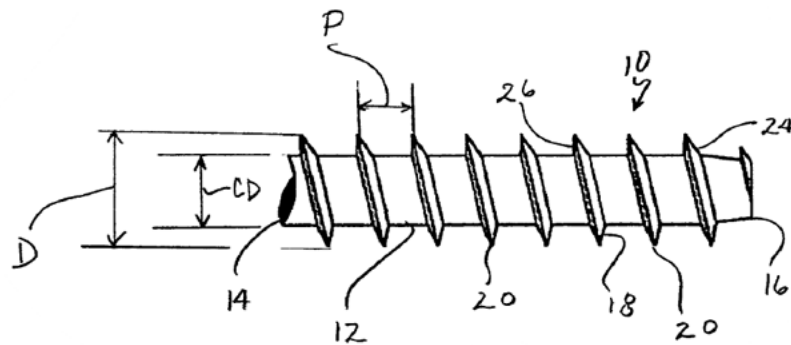
Similarly, Staniszewski's threaded shaft has an asymmetric thread profile:



Ex. 2017, at 1. Staniszewski was submitted to the examiner in an IDS; the examiner marked it “considered” on January 2, 2024. Pet. Ex. 1015, at 1068–1069.

Neuhengen, which the examiner herself identified and considered, likewise shows a screw with an asymmetric thread profile:

FIG. 1



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 on September 7, 2023. Pet. Ex. 1015, at 199, 238. She also rejected certain claims based on prior-art combinations that included Neuhengen. Pet. Ex. 1015, at 229.

In comments submitted with proposed amendments, the patent owner explained that “the standard definitive screw has a continuous symmetrical helical form as is well known to those of skill in the art.” Pet. Ex. 1015, at 296. “In contrast, the thread profile 40 of the temporary screw of FIG. 75 is not the same as the illustrated profile ... of the definitive screw threading.” Pet. Ex. 1015, at 297. “As a result of the open space from the different thread profile of the temporary screw compared to the definitive screw in FIG. 9, the temporary screw threading of FIG. 75 has less surface area contact with the female implant abutment threading.” Pet. Ex. 1015, at 298. This smaller contact area means that less axial pull-out force is required to remove the screw from female threading.

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).

Gracco is therefore cumulative because it “teaches no more than what a reasonable examiner would consider to be taught by the prior art already before the PTO,” *Regeneron*, 864 F.3d at 1350; *see also* Leinsing Decl. ¶¶ 83–89.

c. Nino & Ruetschi

Nino and Ruetschi both teach using torque-limiting drivers in the medical industry generally. Pet. Ex. 1020, at 7 (“This disclosure relates to a medical use driver tool and, in particular, to a torque-limiting driver that disengages at a

predefined torque limit.”); *id.* at 9 (“Torques of this magnitude can be utilized in precision high torque environments such as the installation of dental, joint, vertebral implants and the like.”); Pet. Ex. 1022, at 1 (“A screw-in tool 1 for surgical applications”).

None of the claims assert that the use of a torque-limiting driver by itself is part of the claimed invention. Regardless, the importance of torquing fasteners in surgical and dental applications, including use of torque-limiting drivers, is well-known. *See, e.g.*, Pet. Ex. 1015, at 455 (“In addition, special purpose torque drivers are required to install the screws.”); *see also* Leinsing Decl. ¶ 91.

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In short, Petitioner merely “swap[s] in similar references” for others that were considered and points to features in the art already before the examiner during prosecution. *Siemens Mobility, Inc. v. Metrom Rail, LLC*, 2024 WL 4827396, 2024 WL 4827396, at *7 (PTAB Nov. 19, 2024) (denying institution under § 325(d)). Because Gracco, Derey, Nino and Ruetschi are cumulative of prior art considered during prosecution, *Advanced Bionics* step one is satisfied.

B. Petitioner Does Not Even Try To Demonstrate That The Examiner Committed Material Error

Once step one of *Advanced Bionics* has been satisfied, as it has here, Petitioner bears the burden to show the Office erred in a manner material to the challenged claims’ patentability. *Advanced Bionics*, 2020 WL 740292, at *3. “An

example of a material error may include misapprehending or overlooking specific teachings of the relevant prior art where those teachings impact patentability of the challenged claims.” *Id.* at *3 n.9. But “[i]f reasonable minds can disagree regarding the purported treatment of the art or arguments, it cannot be said that the Office erred in a manner material to patentability.” *Id.* at *3.

The Petition not only fails to make this showing; it does not even try. Petitioner nowhere alleges that the examiner committed any error, and the word “error” does not even appear in the Petition. As the Board has previously made clear, a petitioner’s failure to allege material error is enough for the Board to determine that the petitioner failed to carry its burden. *See, e.g., Balt USA, LLC v. MicroVention, Inc.*, IPR2019-01259, 2021 WL 219251, at *10, 12 (PTAB Jan. 21, 2021) (petitioner’s own analysis of prior art without reference to examiner’s analysis was insufficient to show material error); *Sony Interactive Entm’t LLC v. Terminal Reality, Inc.*, IPR2020-00711, 2020 6065188, at *5 (PTAB Oct. 13, 2020) (petitioner’s argument that asserted references were not substantively evaluated or applied in a rejection failed to sufficiently identify examiner error); *NXP USA, Inc. v. Impinj, Inc.*, IPR2020-00519, 2020 WL 4805424, at *5 (PTAB Aug. 17, 2020) (no discussion of material error in petition); *GlaxoSmithKline Consumer Healthcare Holdings (US) LLC v. Cipla Ltd.*, IPR2020-00369, 2020 WL 4390663, at *5 (PTAB Jul. 31, 2020) (“Petitioner does not explicitly allege error in the

Examiner’s previous consideration of the prior art or arguments, and does not discuss or cite to the factors listed in the Board’s precedential decision in *Becton, Dickinson.*”); *Ocado Grp. PLC v. Autostore Tech. AS*, IPR2021-00412, Paper 9 at 36–39 (PTAB July 21, 2021) (“In the Petition, Petitioner does not specifically address *Advanced Bionics*, or any of the *Becton Dickinson* factors, or **how the Examiner may have misapprehended or overlooked specific material teachings** in the relevant prior art.” (emphasis added)); *Universal Imaging Indus., LLC v. Lexmark Int’l, Inc.*, IPR2019-01387, 2020 WL 959375, at *5 (PTAB Feb. 27, 2020) (“Although Petitioner is correct that the Examiner did not reject any claims of the ’921 patent based on [the asserted reference], that is not the end of our analysis.”). And “a petitioner must provide an analysis” under *Advanced Bionics* part two “even when the asserted prior art is on an IDS, but the Examiner did not apply the reference.” *Ecto World, LLC v. Rai Strategic Holdings, Inc.*, IPR2024-01280, Paper 13 at 5 (Director May 19, 2025).³

³ Nor can Petitioner suggest that the Board itself should “scour[] the Petition to cobble together an argument under the second part of *Advanced Bionics*,” because that “improperly shifts Petitioner’s burden to demonstrate material error onto the Board.” *Ecto World*, IPR2024-01280, Paper 13 at 6 n.2; cf. *Gross v. Cicero*, 619

Even if the Petitioner’s allusions to the prosecution history could be construed as an argument that the examiner erred, that is not enough. All the references here are the same or substantially the same as the art before the examiner. Petitioner’s theory, in short, amounts to a disagreement with the examiner over the state of the art, which is insufficient to show material error.

This case is therefore like *Nespresso USA, Inc. v. K-Fee Sys. GmbH*, IPR2021-01222, 2022 WL 212376 (PTAB Jan. 18, 2022). There, “**four of the six asserted references were considered by the examiner**, and an **additional one** of the references [was] **cumulative** of a reference considered by the examiner.” *Id.* at *10 (emphasis added). The *Nespresso* petitioner argued that the examiner had erred “by allowing the challenged claims to issue ‘without comment and without considering the art in this petition.’” *Id.* The Board correctly concluded that the argument was **insufficient** to meet petitioner’s “**burden of showing that the Office erred**, for example, by ‘misapprehending or overlooking specific teachings of the relevant prior art whose teachings impact patentability of the challenged claims.’” *Id.* at *11 (emphasis added). And citing to “expert testimony, which the Examiner did not have” was likewise “ineffective” to show material error. *Id.*; *see also*

F.3d 697, 702 (7th Cir. 2010) (“Judges are not like pigs, hunting for truffles buried [in the record].”).

Nespresso USA, Inc. v. K-Fee Sys. GmbH, IPR2021-01221, Paper 11 at 21–24 (PTAB May 6, 2022) (denying reconsideration).

The same is true here. The asserted references were either before the examiner or cumulative of the references before the examiner, and Petitioner never “point[s] out sufficiently how the examiner erred in [her] evaluation of the asserted prior art.” *Nespresso*, 2022 WL 212376, at *11. Having largely ignored the prosecution history, and having failed to direct the Board to any specific non-speculative examiner error, Petitioner has failed to carry its burden under *Advanced Bionics* step two.

VI. PETITIONER HAS NOT ESTABLISHED A REASONABLE LIKELIHOOD THAT ANY CLAIM IS UNPATENTABLE

By statute, the Board may institute IPR only if it determines “that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged.” 35 U.S.C. § 314(a). “In an [IPR], the burden of persuasion is on the Petitioner[.]” *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378–1379 (Fed. Cir. 2015).

A. Kofford Is Not Prior Art Because The Priority Applications Support The ’992 Patent’s Claims

Grounds 1–3 rise and fall with the notion that Kofford—a parent to the ’992 patent, by the same inventors—is prior art to the ’992 continuation patent. That is so, according to Petitioner, because “[n]one of the Priority Applications contain an

adequate written description of or enable independent claims 1 and 9.” Petition at 32 (reciting § 112 standards; emphasis added). But Petitioner is incorrect. 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).⁴

1. The Priority Applications Support And Enable Independent Claims 1 And 9

The argument that Kofford is prior art fails because the priority applications support and enable the ’992 patent’s claims, including independent claims 1 and 9.

Petitioner’s argument that the ’992 patent’s priority date should fall in 2023 rather than 2018 depends on the notion that the 2018 priority applications disclosed ***only a single embodiment*** of a one-piece temporary fastener—the one shown in Figure 75. See Petition at 32–33 (“The Priority Applications do not support this

⁴ Petitioner says Patent Owner “has the burden of production to demonstrate that the claims are supported and therefore have an earlier filing date.” Petition at 32 n.5. Patent Owner has satisfied this burden by pointing to written descriptions in the priority applications and providing expert testimony on how a POSA would have understood those descriptions. “[P]etitioner always bears the ultimate burden of persuasion.” *Platinum Optics Tech., Inc. v. Viavi Solutions Inc.*, IP2022-01489, 2024 WL 1579379, at *8 (PTAB Apr. 11, 2024).

claim scope because they describe only one temporary screw embodiment with a different thread or profile: the temporary screw of Figure 75 with an ‘asymmetric’ buttress thread that is different than the symmetric thread of the definitive screw of Figure 9.”).

That is demonstrably incorrect. The 2018 priority applications, and all subsequent applications in this patent family, disclose the same multiple embodiments of the temporary fastener and therefore support and enable 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 Priority Applications Support The Full Scope Of The Thread Pattern/Profile Limitations

The '361 priority application⁵ 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. 1012, at 97. For example, Figure 75 discloses “*a* temporary screw embodiment” that allows “axial separation without unscrewing the post threads.” Pet. Ex. 1012, at 78 (emphasis added); *id.* at 71 (“The terms ‘a’ or ‘an’, as used herein, are defined as one or as more than one.”).

The '361 priority application also explains that “the threads could be designed to provide engagement with the implant abutment threads through axial

⁵ For purposes of this preliminary response, Patent Owner does not address in depth the disclosures in the 2018 provisional applications, which also provide the '992 patent priority as of their filing dates. See Pet. Ex. 1009 (provisional application 62-742,942); Pet. Ex. 1010 (provisional application 62-774,402); Pet. Ex. 1011 (provisional application 62-818,082). Patent Owner focuses exclusively on the '361 nonprovisional application because it predates Kofford. See Pet. Ex. 1012, at 1 (application filed October 8, 2019); Pet. Ex. 1013, at 1 (Kofford issued April 26, 2022). Therefore, if the '992 patent is entitled to the '361 application's priority date, Kofford cannot be considered prior art.

motion in the opposite direction to the arrow shown in FIG. 75,” Pet. Ex. 1012, at 97—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. 1012, at 100. The disclosure also includes “an interference fit between the bottom of the post with the threads.” Pet. Ex. 1012, at 100. 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. 1012, at 72; *id.* at 100 (“Various embodiments have been described to illustrate the disclosed inventive concepts, not to limit the invention.”); *see also* Leinsing Decl. ¶¶ 96–97. The ’730 nonprovisional application that directly resulted in the ’992 patent’s issuance contains similar disclosures and instructions for interpreting the disclosures. *See* Pet. Ex. 1015, at 32–33, 40, 61, 94.

To argue—despite these disclosures—that Figure 75 is the sole embodiment of a single-piece temporary fastener disclosed, the Petition fixates on the priority applications’ 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. 1012, at 72; *id.* at 100. Perhaps most strikingly, this 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 11–12 (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 11–12. 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 36–37. In each of those cases, the specifications failed to disclose the embodiments later 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).⁶

The ’361 priority application describes more than (1) a single-piece temporary fastener with what the Petition calls a reverse buttress thread; by its

⁶ It is telling that none of these cases were IPRs either. *Tronzo*, *Synthes*, and *Amgen* were appeals of infringement cases in federal district courts. *Tronzo*, 156 F.3d at 1155–1156; *Synthes*, 734 F.3d at 1334–1335; *Amgen*, 598 U.S. at 603–604. *Deacon* was a direct appeal from an examiner’s claim rejection. 2005 WL 755435, at *1. So even though Petitioner’s priority argument may technically fall within the PTAB’s IPR jurisdiction, *see Parus Holdings, Inc. v. Google LLC*, 70 F.4th 1365, 1373 (Fed. Cir. 2023), its true argument is a 35 U.S.C. § 112 challenge to the ’992 patent’s specifications and enablement. That argument should have been presented in the district court but was not.

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. ¶¶ 96–111.

b. The Priority Applications Support The Full Scope Of The Release Limitations

Furthermore, the priority applications make clear that the disclosed embodiments include those without a “split post with deflecting legs,” as the Petition describes them. Petition at 38. 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. 1012, at 97. 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 priority applications do not describe the split-post structure as critical to the invention’s release limitations. To the contrary, they disclose using such a structure for both “axial extraction” as well as “axial insertion.” Pet. Ex. 1012, at 100. And immediately after, they disclose 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. 1012, at 100.

The '992 patent describes an “attachment post portion 39” with “a slot 41 and asymmetric threads or serrations 40.” Pet. Ex. 1001, at 42. 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 34. 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 ***priority applications disclose 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 39–40. 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).⁷ The same is not true here; a POSA would understand the disclosures to cover numerous embodiments. Leinsing Decl. ¶¶ 112–120. Properly interpreted, the priority applications adequately enable the full scope of the '992 patent's claims.

2. The Priority Applications Support Dependent Claims 2–8 And 10–12

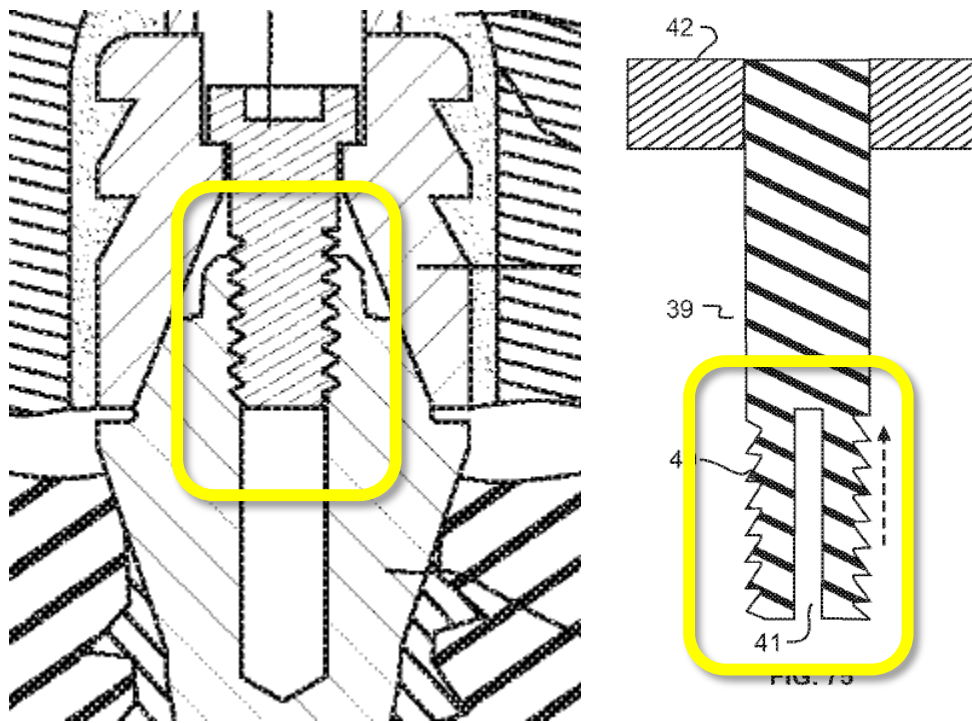
As explained above, the priority applications adequately enable the full scope of the '992 patent's claims. For those same reasons, they adequately enable dependent claims 2–8 and 10–12 as well.

For example, the Petition argues that Claim 3 “is not described or enabled because it encompasses many undisclosed asymmetric threads, including a reverse buttress thread.” Petition at 5. But as explained above, the priority applications disclose many more embodiments than the single one on which the Petition

⁷ Like Petitioner's previous round of cases, it is likewise telling that none of these cases arise from IPRs either; they are all appeals from federal district courts or direct appeals from examiner claims rejections. *ICU Med.*, 558 F.3d at 1372; *D Three*, 890 F.3d at 1044; *Anascope*, 601 F.3d at 1334; *Gunaratnam*, 2017 WL 5499118, at *1; *Vargas*, 2007 WL 2823700, at *1.

fixates—including, specifically, what the Petition calls a “reverse buttress thread.” See Pet. Ex. 1012, at 97 (“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”). The same is true for Claim 7.

The Petition also argues that Claim 10 is not supported “because the threads of the temporary screw of Figure 75 have the same maximum thread diameter and thread pitch, and therefore the same pitch angle, as the threads of the definitive screw and the abutment of Figure 9.” Petition at 42. The drawings themselves disprove this. The close-up of Figure 9 (below left) depicts a permanent screw with threads that match the abutment’s female threads. The asymmetric threads in Figure 75 (below right) do not match.



Pet. Ex. 1012, at 20, 38 (annotations added).

Nor is it accurate to say the threads of the temporary and definitive screws “have ... the same pitch angle.” Petition at 42. The pitch-angle formula that Petitioner’s own expert proposes disproves this:

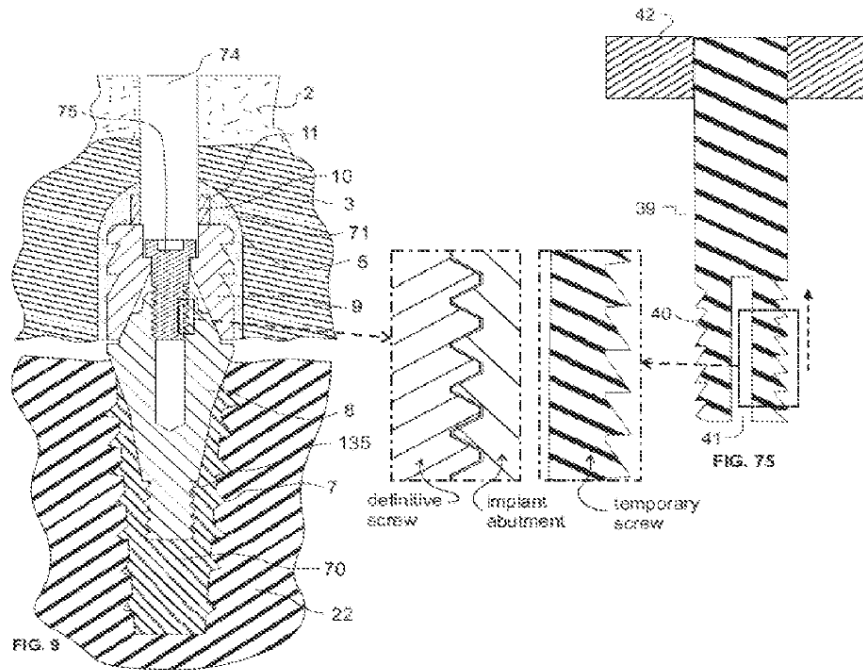
For a screw with a maximum thread diameter D and a thread pitch P , the pitch angle λ may be calculated by the following equation:

$$\tan (\text{pitch angle } \lambda) = P / \pi D$$

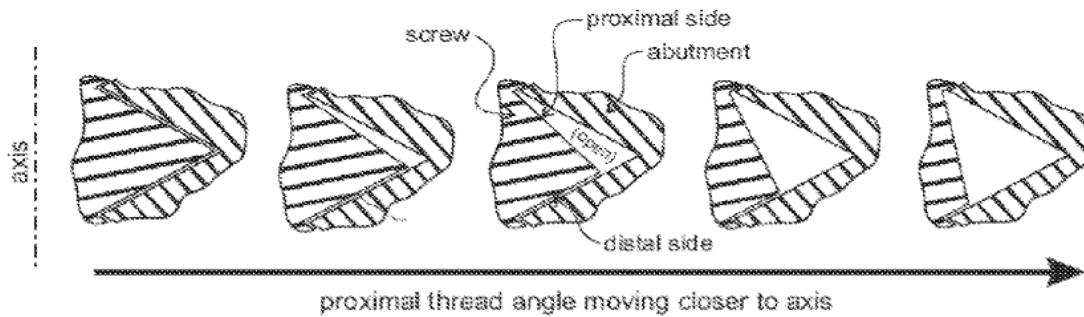
Pet. Ex. 1002, ¶ 156. Since the one of the two inputs (thread diameter) is different between the temporary and permanent screws, the formula cannot spit out the same pitch angle.

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 prosecution—when the examiner requested information on a similar point⁸—show this clearly:

⁸ 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



Pet. Ex. 1015, at 296.



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”); *see id.* at 209 (similar objection for claim 27 in ’730 application).

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 temporary screw would not fit into the abutment threads.

A POSA would have easily understood all this. Leinsing Decl. ¶¶ 123–128. So Petitioner is wrong to argue that Claim 10 is unsupported on this basis.

Finally, Petitioner argues that the priority applications do not support Claim 7’s “threads deform” limitation “because they do not describe any differently-threaded temporary screw with threads that ‘deform’ during release.” Petition at 43. Wrong again. The priority application disclose a temporary fastener that uses “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. 1012, at 100.

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; that would degrade the permanent screw’s function, which 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.

¶¶ 129–130. 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 deformation. Leinsing Decl. ¶¶ 130–131. 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 that minimally fills the open volume of the female threading. Leinsing Decl. ¶¶ 130. A POSA would understand this disclosure to refer to such a temporary fastener. Leinsing Decl. ¶¶ 130–131.

In short, the Petition fails to show that the specification and description are insufficient to enable Claim 7.

B. Ground 1: Kofford Does Not Anticipate Claims 1–6, 8–9 Or 11–12 Because Kofford Is Not Prior Art

“Anticipation requires the presence in a single prior art disclosure of all elements of a claimed invention arranged as in the claim.” *Therasense, Inc. v. Becton, Dickinson & Co.*, 593 F.3d 1325, 1332 (Fed. Cir. 2010). Because Kofford is not prior art, Petitioner’s anticipation arguments fail.

C. Ground 2: Claims 4, 7 And 12 Were Not Obvious Based On Kofford In View Of Poovey

“Section 103(a) forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a

person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (quoting 35 U.S.C. § 103(a)).

Because Kofford is not prior art, Petitioner’s argument that this combination makes claims 4, 7 and 12 obvious necessarily falls short.

D. Ground 3: Claims 7 And 10 Were Not Anticipated By Kofford Because Kofford Is Not Prior Art

As explained, “[a]nticipation requires the presence in a single prior art disclosure of all elements of a claimed invention arranged as in the claim.”

Therasense, 593 F.3d at 1332. Because Kofford is not prior art, Ground 3 fails to show a reasonable likelihood that claims 7 and 10 are unpatentable.

E. Ground 4: Claims 1, 3, 5–7 And 9–12 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). 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 [Bernhard] Figure 8 to temporarily coping 700 to abutment 650 with a temporary screw 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.” Petition at 55. 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 that this solution “would be simpler.” Petition at 56.

Such a combination, however, 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. ¶ 136. 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. ¶ 137. 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. ¶ 137. Thus, this combination would not be obvious to a POSA.

To the contrary, what *is* obvious is that the 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.

F. Ground 5: Claims 4 And 8 Would Not Have Been Obvious Based On Bernhard In View Of Poovey, Gracco And Derey

Ground 5 relies on similar obviousness arguments as Ground 4. “[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 78. For the same reasons explained above, that is not the case because such a combination would not have a reasonable expectation of success.

Petitioner further argues that “Claims 4 and 8, which require a portion of the distal shaft of the temporary screw to be hollow, would have been obvious in further view of Derey.” Petition at 78. But the deflecting legs in Derey are not relevant to the invention described in Claims 4 and 8 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. *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. Leinsing Decl. ¶¶ 139–142.

G. Ground 6: Claim 2 Would Not Have Been Obvious Based On Bernhard In View Of Poovey, Gracco And Ruetschi

Ground 6 relies on similar obviousness arguments as Grounds 4 and 5. For the same reasons explained above, that is not the case because combining Bernhard’s system with Poovey’s silicone threading for a temporary screw would not have a reasonable expectation of success. Leinsing Decl. ¶ 143.

VII. 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 ’992 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.”⁹

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

⁹ Voices at 42:30–43:07.

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 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).¹⁰

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 the patent claims, likewise offer additional objective evidence that shows the '992 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]

¹⁰ 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 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)).

‘Separable Fastener’ device” is irrelevant “because it would have no nexus with claims 1–12.” Petition at 84. The success of Petitioner’s Separable Fastener is precisely why Petitioner introduced NeoConvert; the two systems compete head-to-head and enjoy the same benefits and advantages.¹¹

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.¹² 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

¹¹ Voices at 45:00–34 (dental practitioner observing, before Petitioner’s NeoConvert system entered the market, that dental-implant companies would “***all gonna be trying to copy this, I know it***” and that copycats are “the way the implant industry works” (emphasis added)).

¹² 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”).

imagine doing a conversion any other way.”¹³ “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.”¹⁴ The embodiments present in Petitioner’s NeoConvert systems enjoy these same benefits and advantages.

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.

VIII. CONCLUSION

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

Respectfully submitted,

Dated: August 29, 2025

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Counsel for Patent Owner

¹³ Voices at 6:20–31.

¹⁴ Voices at 7:05–7:20.

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, 10,406 words, which is within the limit set in 37 C.F.R. § 42.24(b)(1). This word count does not include the items excluded by 37 C.F.R. § 42.24.

Respectfully submitted,

Dated: August 29, 2025

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CERTIFICATE OF SERVICE

I hereby certify that on August 29, 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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