



Patent Owner's Presentation

Straumann USA, LLC v. Smart Denture Conversions, LLC

U.S. Patent No. 11,937,992 (IPR2025-00956)

U.S. Patent No. 12,156,781 (PGR2025-00054)

September 9, 2026

Patent Trial and Appeal Board, USPTO

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

1: Written Description

- Kofford is not prior art (IPR)
- Specification supports patent claims (PGR)

2: Prior Art

- None of Petitioner's references contain key inventive concept (IPR, PGR)
- No motivation to combine (IPR, PGR)

3: Indefiniteness

- Claims are sufficiently definite for POSA (PGR)

IPR/PGR Grounds

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Grounds	'992 Claims	'781 Claims	References	Basis
IPR 1, IPR 3	IPR1: 1-6, 8-9, 11-12 IPR3: 7, 10		Kofford	Anticipation (§ 102)
PGR 2		1-16		Written Description (§ 112(a))
IPR 2	4, 7, 12		Kofford + Poovey	Obviousness (§ 103)

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IPR 4, PGR 3	1, 3, 5-7, 9-12	10, 12, 15, 16	Bernhard + Poovey + Gracco	Obviousness (§ 103)
IPR 5, PGR 4	4, 8	1-9, 11, 13, 14	Bernhard + Poovey + Gracco + Derey	Obviousness (§ 103)
IPR 6	2		Bernhard + Poovey + Gracco + Ruetschi	Obviousness (§ 103)

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PGR 1		6, 10-16		Indefiniteness (§ 112(b))
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'992 and '781 Patents

Background

Conversion Process

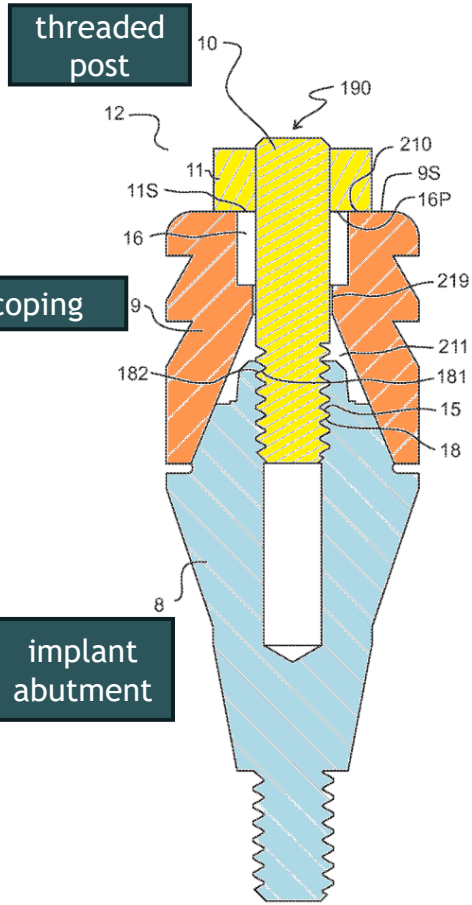


FIG. 4

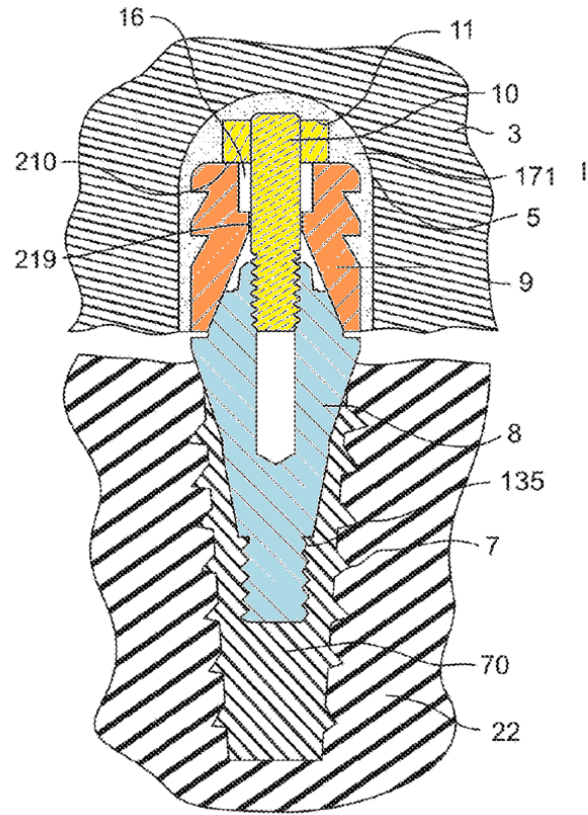


FIG. 5

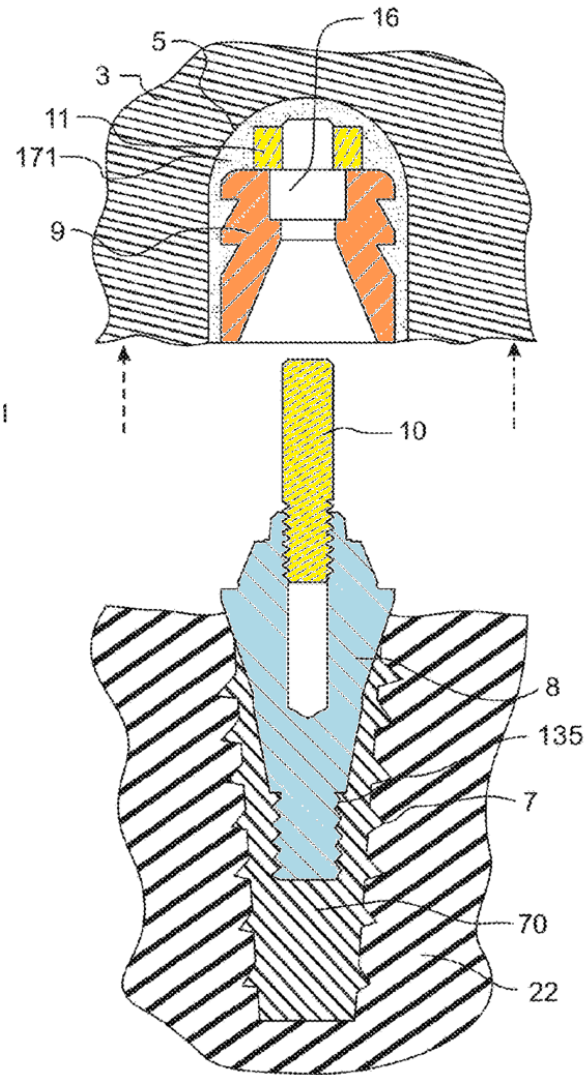


FIG. 6

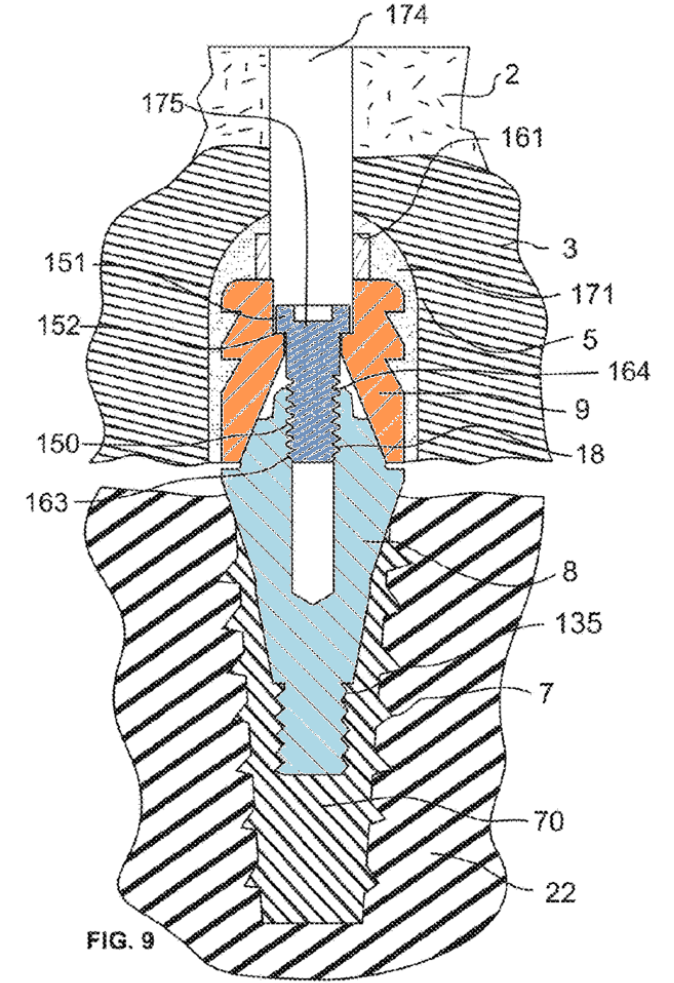
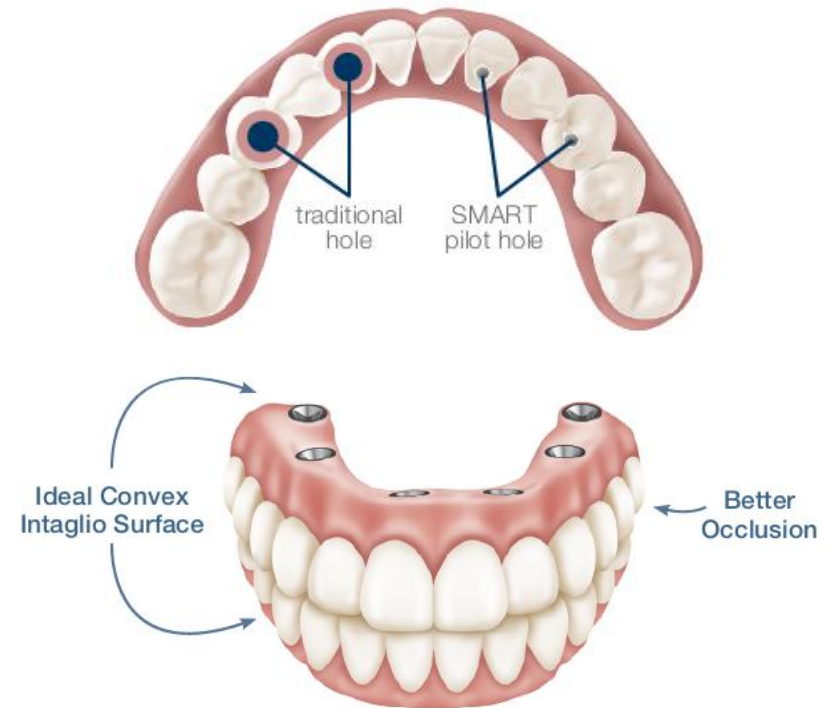


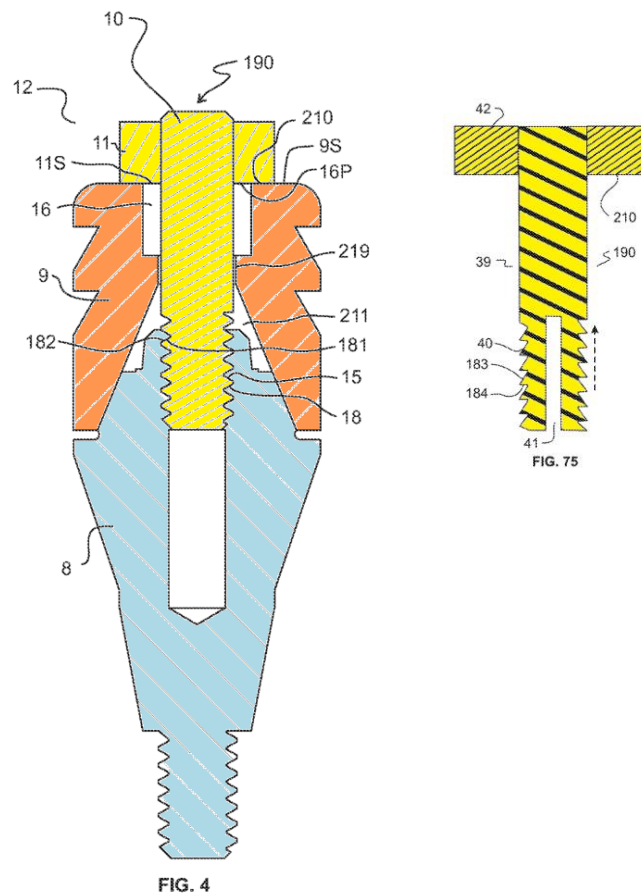
FIG. 9

Pull-Out Threaded Temporary Fasteners

- Faster procedures resulting in less chair time (30 minutes versus two hours)
- Stronger prostheses (smaller pilot holes)
- Better contours
- Better occlusion using closed-tray pickup



Screw-Attached Pick-Up Dental Coping



- “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”
- “initially orient and **hold a coping against an abutment** with a force along the same axis as the semi-definitive screw”
- “aligned coping can be picked-up in a closed-tray impression process **without unscrewing** the temporary fastener”

Inventive Concept: “Mismatched” Temporary Screw

- Thread pattern/profile/configuration *different* from definitive screw’s male threads and abutment’s female threads
- Torques into *same female abutment threads* to predetermined torque/engagement
- Releases axially *without unscrewing* (pull-out)
- Preserves abutment threads for definitive screw

'992 Patent - Claim 1

- [a] A dental system comprising:
- [b] an **implant abutment** having threads;
- [c] a **definitive screw** having an axis with a length measured along the axis and a width measured perpendicular to the axis, the definitive screw having a proximal head end having a tool interface and a distal post portion **having threads configured to engage the threads of the implant abutment**;
- [d] a **coping** having a proximal end with an aperture, wherein the aperture is larger than the distal post portion of the definitive screw and small than the proximal head end of the definitive screw; and
- [e] a **temporary screw** having an **axis** with a length measured along the axis and a **width** measured perpendicular to the axis, the temporary screw comprising:
 - [f] a **proximal head portion** with a **width larger than** the **aperture** of the coping; and
 - [g] a distal shaft portion with **threads** in a **pattern** that is **shaped different** from a pattern of the **threads of the definitive screw**,
- [h] wherein the temporary screw is **rotatable in a distal direction** whereby the distal shaft portion of the temporary screw **engages the threads of the implant abutment** to a predetermined torque which causes the proximal head portion of the temporary screw to **hold the coping in alignment with the implant abutment**, and [i] wherein an **axial force** in a proximal direction from pick-up processing **releases the coping and the temporary screw** from the implant abutment.

'781 Patent - Claim 1

[a] A dental system comprising:

[b] a **coping** having a proximal end with an aperture; and

[c] an **implant abutment** having threads;

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

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

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

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

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

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

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

[k] wherein the distal shaft portion of the temporary fastener comprises threading which is **sized and configured** to make contact with the implant abutment thread over a first threading contact area when to hold the coping against the implant abutment, wherein the distal post portion of the definitive screw is **sized and configured** to make contact with the implant abutment threads over a second threading contact area to hold the coping against the implant abutment, and wherein the **first threading contact area is less than the second threading contact area**.

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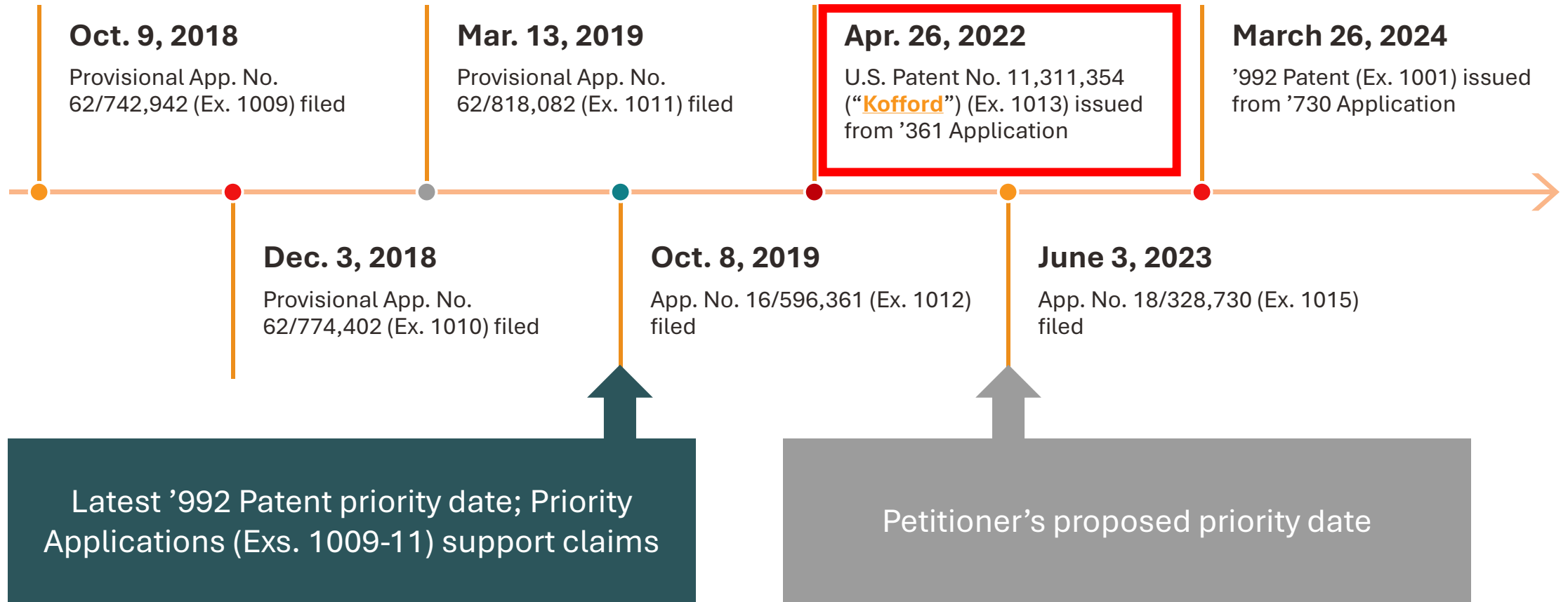
Written Description



Roadmap

- Single-species disclosure threshold:
 - Multiple structural and functional limitations define narrow genus
 - Predictable art
 - POSA well able to understand specification (BS, 3/5+ yrs experience)
- Figure 75: sufficient to support claimed temporary screw
- Specification discloses additional species

Priority Timeline (IPR)



In mechanical arts, “a single embodiment” can be sufficient

- Written description is a **context-specific** requirement that “**varies with the nature and scope of the invention**” and with existing “scientific and technologic knowledge.” *Juno Therapeutics v. Kite Pharma*, 10 F.4th 1330, 1335 (Fed. Cir. 2021). Disclosure need only enable POSA to “‘visualize or recognize’ the members of the genus.” *Id.*
- When “an invention pertains to an art where the results are predictable,” “a broad claim can be enabled by **disclosure of a single embodiment**.” *Epistar v. ITC*, 566 F.3d 1321, 1336 (Fed. Cir. 2009).
- “[T]here is no categorical rule that a species cannot suffice to claim the genus.” *Hynix Semiconductor v. Rambus*, 645 F.3d 1336, 1352 (Fed. Cir. 2011).
- “[T]he lack of complexity of the relevant technology, the predictability of the mechanical arts, and the scope of the claims ... **reduces the number of species that must be disclosed**.” *Gillette v. Sphere USA*, 2023 WL 6367741, at *17 (PTAB Sept. 19, 2023).

Figure 75 is sufficient to support the claimed temporary fastener

- “For example, as shown in FIG. 75 an alignment fastener post 39 may contain a **separable threaded or serrated portion 40 that engages the screw threads in the abutment for pick-up, but that will release with axial force after.**”
- “FIG. 75 shows a temporary fastener 190 with a head 42 portion and an attachment post portion 39. The attachment post portion 39 is shown as having a slot 41 and **asymmetric threads or serrations 40** that have proximal flank 183 and a distal flank 184.”
- “This **asymmetric threading still allows the temporary attachment post portion 39 to be inserted through rotation** like other temporary screw embodiments for alignment for coping pick-up. The post 39 may be subsequently extracted with a separation force in the axial direction.”

Figure 75 is sufficient to support the claimed temporary fastener

- Drawings “for the purpose of illustrating certain convenient embodiments,” “not to be considered as limitation”
- “Other objects, features, embodiments and/or advantages of the invention will be apparent from the following specification taken in conjunction with the following drawings”

Specification discloses at least three species

1. Temporary fasteners with asymmetric threads (with or without slots)
2. Slotted temporary fasteners with symmetric threads
3. Interference/press fit

1. Temporary fasteners with asymmetrical threads (with or without slots)

- “For example, as shown in FIG. 75 an alignment fastener post 39 may contain a separable **threaded or serrated portion 40** that engages the screw threads in the abutment for pick-up, but that will release with axial force after.”
 - “This **asymmetric threading** still allows the temporary attachment post portion 39 to be inserted through rotation like other temporary screw embodiments for alignment for coping pick-up. The post 39 may be subsequently extracted with a separation force in the axial direction.”
 - “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”
- “[P]olymer ... posts and fasteners may be included in this and other embodiments.”
- “In **some** embodiments, the threaded end of the post portion of the temporary fastener has a **deflecting feature** that allows the post to engage or disengage the abutment threads through axial motion instead of a rotary screw motion.”

2. Slotted temporary fasteners with symmetrical threads

- “For example, as shown in FIG. 75 an alignment fastener post 39 may contain a separable **threaded or serrated portion 40** that engages the screw threads in the abutment for pick-up, but that will release with axial force after.”
- “[P]olymer ... posts and fasteners may be included in this and other embodiments.”
- “In some embodiments, the threaded end of the post portion of the temporary fastener has a **deflecting feature** that allows the post to engage or disengage the abutment threads through axial motion instead of a rotary screw motion.”
 - “a **split post** that has deflecting sections”

3. Interference/Press Fit

- “For example, as shown in FIG. 75 an alignment fastener post 39 may contain a separable **threaded or serrated portion 40** that engages the screw threads in the abutment for pick-up, but that will release with axial force after.”
- “[P]olymer ... posts and fasteners may be included in this and other embodiments.”
- “**interference fit** between the bottom of the post with the threads may also be designed to provide sufficient engagement to provide adequate alignment and fixing of the coping for the pick-up bonding process”
- Brunski: relevant specification language “certainly describing” interference fit; “it’s described here”

Summary

- On these facts, law establishes single-species disclosure threshold
 - Multiple structural and functional limitations define narrow genus
 - Predictable art
 - POSA well able to understand specification (BS, 3/5+ yrs experience)
- Figure 75 is enough
- In any event, the specification discloses three species:
 1. Temporary fasteners with asymmetric threads (with or without slots)
 2. Slotted temporary fasteners with symmetric threads
 3. Interference/press fit

2

Prior Art

Roadmap

- None of four references—*alone or combined*—disclose inventive concept
 - No reference teaches or suggests two screws with mismatched threading
- No motivation to combine references to achieve claimed invention

Inventive Concept: “Mismatched” Temporary Screw

- Thread “pattern”/“profile”/“configuration”/“contour” *different* from definitive screw’s male threads and abutment’s female threads
- Torques into *same female abutment threads* to predetermined torque/engagement
- Releases axially *without unscrewing* (pull-out)
- Preserves abutment threads for definitive screw

'992 Patent Claim 1 defines inventive concept

- [a] A dental system comprising:
- [b] an **implant abutment** having threads;
- [c] a **definitive screw** having an axis with a length measured along the axis and a width measured perpendicular to the axis, the definitive screw having a proximal head end having a tool interface and a distal post portion **having threads configured to engage the threads of the implant abutment**;
- [d] a **coping** having a proximal end with an aperture, wherein the aperture is larger than the distal post portion of the definitive screw and small than the proximal head end of the definitive screw; and
- [e] a **temporary screw** having an **axis** with a length measured along the axis and a **width** measured perpendicular to the axis, the temporary screw comprising:
 - [f] a **proximal head portion** with a **width larger than** the **aperture** of the coping; and
 - [g] a distal shaft portion with **threads** in a **pattern** that is **shaped different** from a pattern of the **threads of the definitive screw**,
- [h] wherein the temporary screw is **rotatable in a distal direction** whereby the distal shaft portion of the temporary screw **engages the threads of the implant abutment** to a predetermined torque which causes the proximal head portion of the temporary screw to **hold the coping in alignment with the implant abutment**, and [i] wherein an **axial force** in a proximal direction from pick-up processing **releases the coping and the temporary screw** from the implant abutment.

'781 Patent Claim 1 defines inventive concept

[a] A dental system comprising:

[b] a **coping** having a proximal end with an aperture; and

[c] an **implant abutment** having threads;

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

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

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

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

[h] wherein the shaft of the temporary fastener extends through the aperture of the coping and the distal shaft portion **engages the implant abutment threads** with an engagement depth at a predetermined torque and is configured to cause the proximal

portion of the temporary fastener to **hold the coping into alignment with the implant abutment** prior to attachment of the definitive screw,

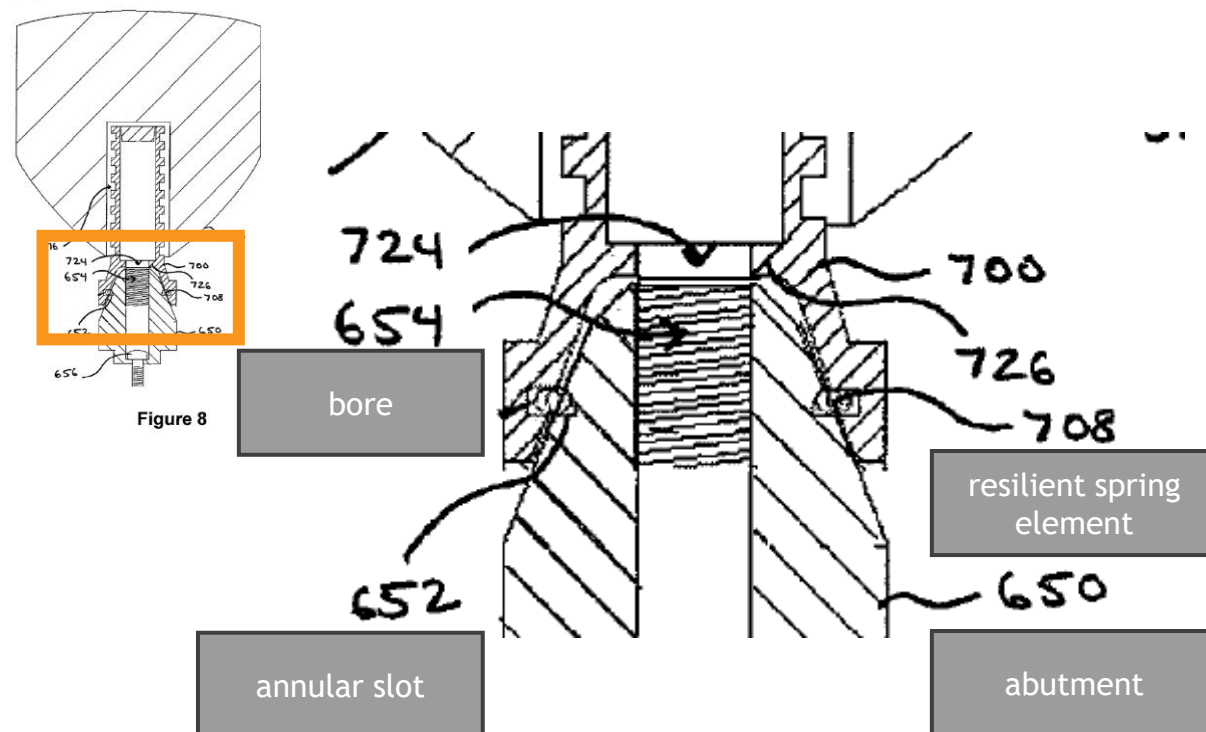
[i] wherein the temporary fastener is configured to **release** at least a portion of the temporary fastener and the coping **from the implant abutment** as a unit when an **axial release force** is applied in a proximal direction to the temporary fastener,

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

[k] wherein the distal shaft portion of the temporary fastener comprises threading which is **sized and configured** to make contact with the implant abutment thread over a first threading contact area when to hold the coping against the implant abutment, wherein the distal post portion of the definitive screw is sized and configured to make contact with the implant abutment threads over a second threading contact area to hold the coping against the implant abutment, and wherein the **first threading contact area is less than the second threading contact area**.

Bernhard: snap-fit provisional connection features

- Snap-fit fasteners to temporarily connect coping to abutment
- “[P]rovisional connection features”: fingers, spring, snap fit, friction fit, elongate member, protrusions, slots, flange, grooves



Bernhard: permanent screws, no temporary screws

- Refers to temporary mechanisms as “provisional connection feature”
- Never shows threaded provisional connection feature that engages with abutment threads

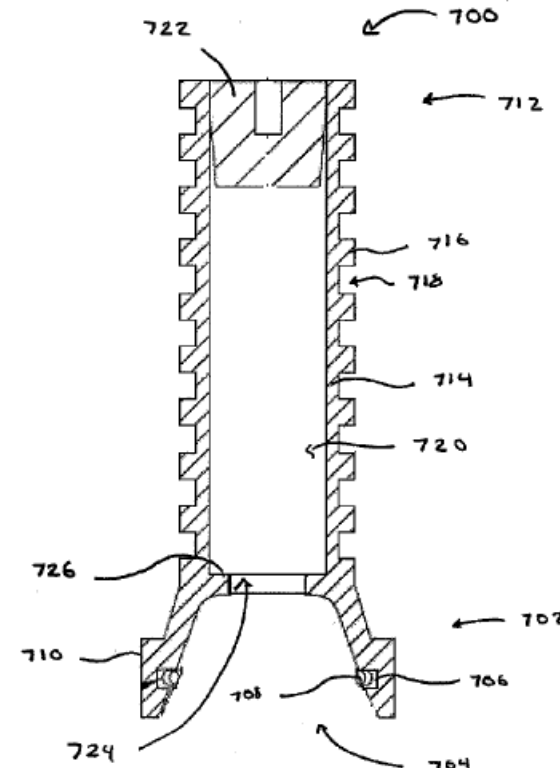


Figure 7A

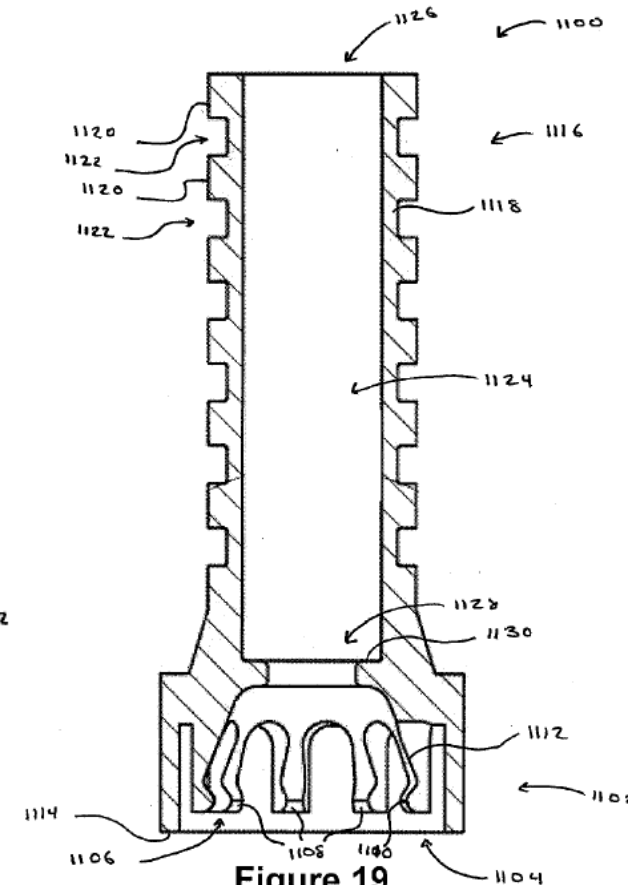


Figure 19

Poovey: screws with symmetrical, flexible threads

- “Temporarily connects coping to implant during conversion’s impression phase, “threaded into the internal threading in a dental implant”
- “threads made of metal or plastic and coated with a heat labile plastic or silicone”
- “engaging *corresponding threading* in the internal cavity of the implant in a *closely fitted engagement*”
- Does not disclose a permanent screw

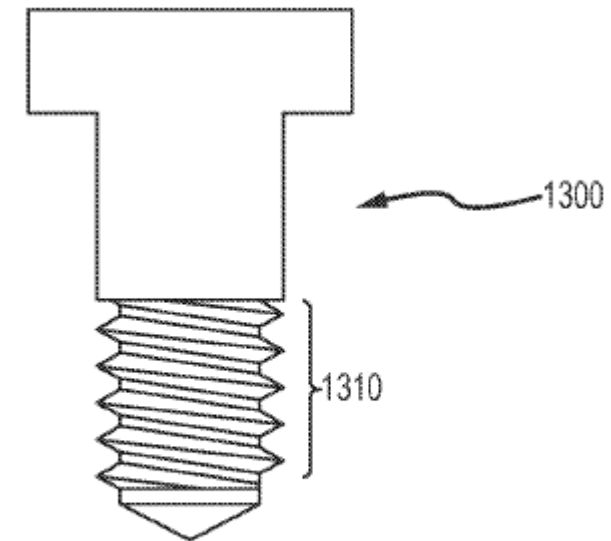


FIG.13

Gracco: destructive testing

- Experiment to measure force to pull mini-screws out of synthetic bone
- Mini-screws “self-drilling and self-tapping”
- “Since the experimental model used in this study could not really represent the clinical environment ..., more research is needed”
- Leinsing: “The titanium mini-screws did not deform or degrade to release the mini-screws; the synthetic bone material around the screws failed”

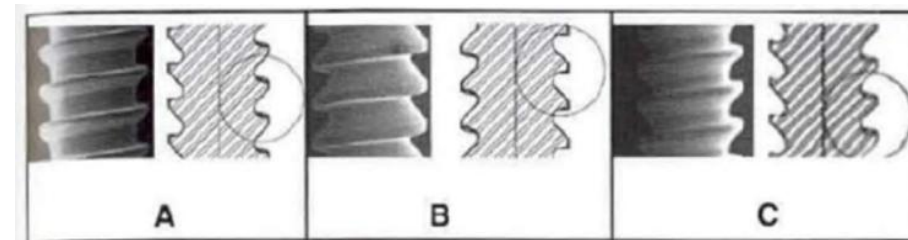
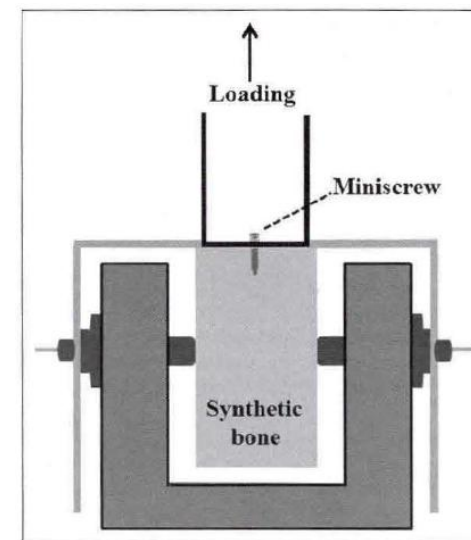


Fig 2. Configuration of testing setup.

Derey teaches snap-fit connectors

- Plastic snap-in connector to temporarily hold elements to implant or abutment during conversion
- Two legs compress or flex inward to hold connector in female abutment threading
- Push in, pull out

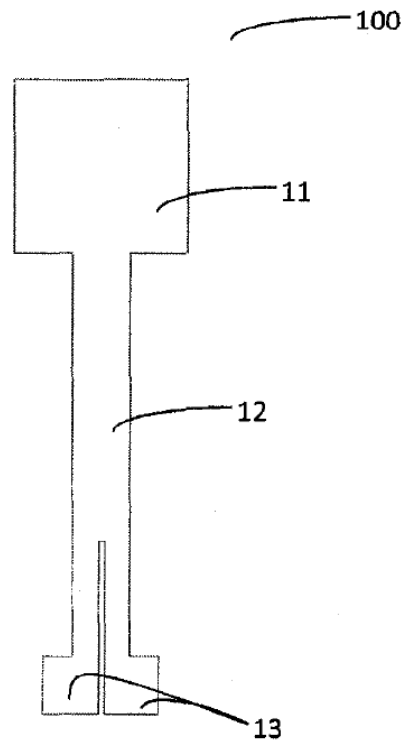


Fig. 5

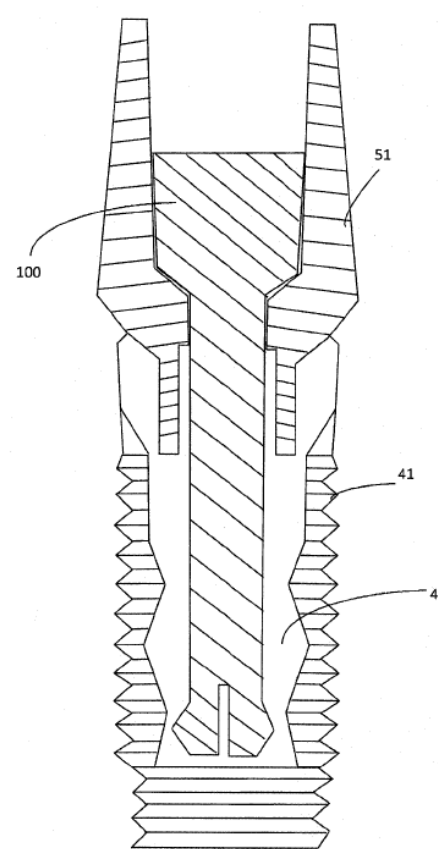


Fig. 6

Petitioner's references do not teach or suggest:

	Bernhard	Poovey	Gracco	Derey
Thread pattern/profile/configuration <i>different</i> from definitive screw's male threads and abutment's female threads	X	X	X	X
Torques into <i>same female abutment threads</i> to predetermined torque/engagement	X		X	X
Releases axially <i>without unscrewing</i> (pull-out)	X			
Preserves abutment threads for definitive screw			X	

No reference—alone or combined— contains key inventive concept

- Bernhard: snap-fit provisional connection features
- Poovey: symmetrical, flexible threads
- Gracco: self-tapping screws that destroy female threads
- Derey: snap-fit connectors that push in / pull out

No motivation to combine prior art

Even if POSA motivated to combine Bernhard-Poovey:

- Still no mismatched threads
- No additional motivation to further modify with Gracco/Derey
- POSA would not look to Gracco's destructive testing

Bernhard/Derey teach away from claimed combination

- Bernhard: snap/friction “provisional connection features”; sole threaded connectors are permanent (definitive) screw
- Derey: push-in/pull-out snap connector without threading; “designed to be used instead of the screws”

Summary

- None of four references—*alone or combined*—disclose inventive concept
 - No reference teaches or suggests two screws with mismatched threading
- No motivation to combine references to achieve claimed invention

3 (PGR Only)

Indefiniteness

Roadmap: Only PGR Claims 6 and 10-16

- Claim 6's limitations not “purely functional”; functional limitations connected to thread geometry
- Claim 10 (“does not essentially match”) informs POSA “with reasonable certainty ... about the scope of the invention,” *Nautilus v. Biosig Instruments*, 572 U.S. 898, 901 (2014)

Claim 6 not indefinite

- Petitioner argues that Claim 6 includes only functional limitations at the “point of novelty”
- Limitations [c], [d], [e], [g], [h], [i], [j] tightly connected to temporary fasteners’ thread geometry
 - Rotary engagement with abutment threads
 - Engagement depth at predetermined torque
 - Release as unit without rotation
 - Does not engage abutment threads continuously

'781 Patent - Claim 6

[a] A dental system comprising:

[b] a **coping** having a proximal end with an aperture; and

[c] an **implant abutment** having threads;

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

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

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

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

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

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

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

Claim 10's "does not essentially match" is not indefinite

- Informs POSA "with reasonable certainty ... about the scope of the invention," *Nautilus v. Biosig Instruments*, 572 U.S. 898, 901 (2014)
 - Plain language
 - Specification
 - Prosecution history
 - Brunski's application
- Limitations [b], [d], [g], [i], [j] demonstrate structure, function

'781 Patent - Claim 10

[a] A dental system comprising:

[b] an **implant abutment** having threads having an **implant abutment threads contour** and an implant abutment longitudinal axis;

[c] a **coping** having a proximal end with a central aperture, and

[d] a **temporary fastener** having a longitudinal axis with a length measured along the longitudinal axis and a width dimension measured perpendicular to the longitudinal axis, the temporary fastener comprising:

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

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

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

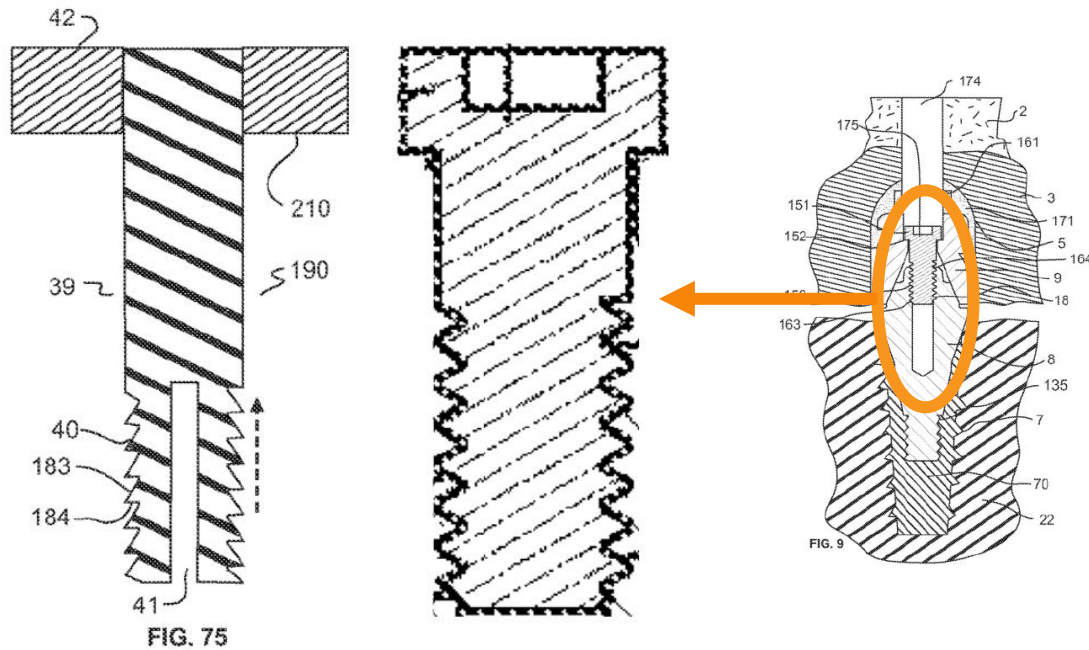
[h] a proximal portion with an outer surface devoid of shaft threading,

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

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

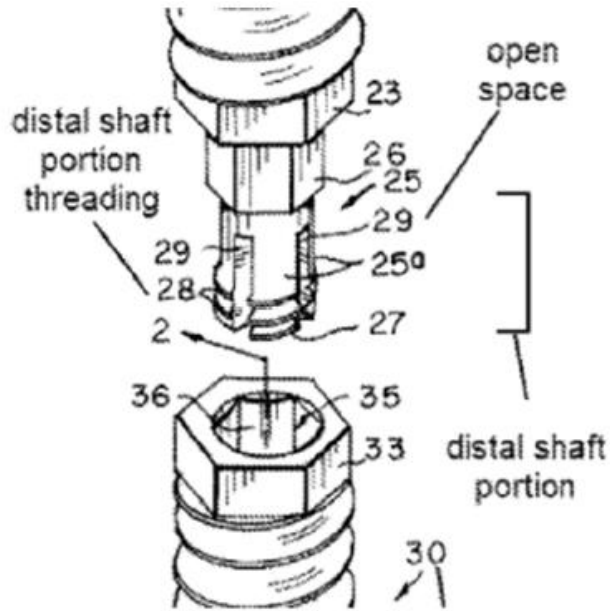
[k] wherein the **axial force** above the predetermined value in the proximal direction is **configured** to be applied in a pick-up process after the coping is adhesively bonded to a prosthesis or in a closed tray impression process.

Specification illustrates meaning



- Drawings provide example
- Figure 75: asymmetrical thread contour does not essentially match abutment's symmetric thread contour (Figure 9)
- Figure 9: definitive screw thread contour does essentially match abutment thread contour

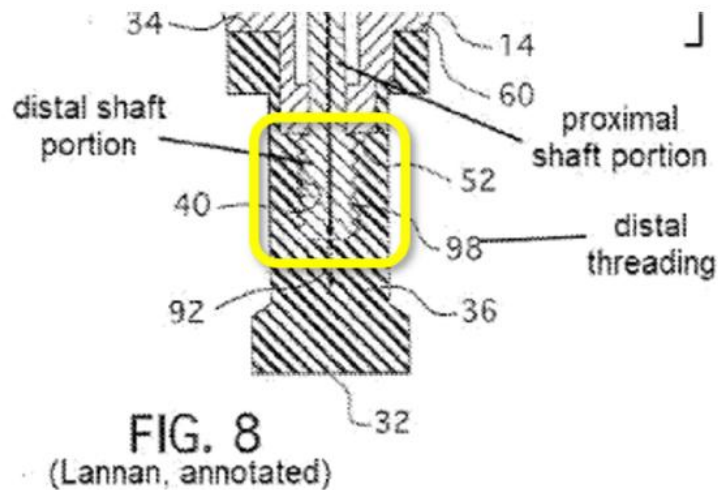
Prosecution history shows POSAs can interpret and apply



Berrevoets FIG. 1
(shown in Prosecution History)

- Claim 31 (issued as claim 10) initially rejected based on prior art (Lannan-Lazzara-Berrevoets):
 - “Berrevoets teaches an apparatus (Figs. 1-3) comprising an implant (30 in Fig. 1) having threads (38 in Fig. 3) and a screw (20 in Fig. 1) having a distal shaft portion ... having an outer surface comprising shaft threading (28 in Fig. 1) having a shaft threading contour (Fig. 1) wherein the shaft threading contour *does not essentially match the implant threads contour*”
 - “Berrevoets ... discloses an apparatus comprising an implant having threads and a screw ... wherein the shaft threading contour *does not essentially match the implant threads contour*”

Prosecution history shows POSAs can interpret and apply



Lannan (shown in
Prosecution History,
annotated by Leinsing)

- Claim 31 (issued as claim 10) initially rejected based on prior art (Lannan-Lazzara-Berrevoets):
 - “Lannan does not disclose an implant abutment ... wherein the shaft threading contour” of the fastener “*does not essentially match*” the implant thread contour”
 - “Lannan is silent to an implant abutment having threads, ... wherein the shaft threading contour *does not essentially match* the implant threads contour,” — i.e., Lannan shows a system that does essentially match.

Brunski shows POSA can interpret and apply

- “*this difference* in the two threading contours means that the shaft threading contour of the outer surface of the distal portion of the shaft of the temporary fastener would ‘not essentially match’ the implant abutment threads contour”
- n.5: “I have assumed that this limitation is definite, i.e., that it is disclosed *if the temporary fastener threading contour and the implant abutment threads contour are different*”

Summary: Only PGR Claims 6 and 10-16

- Claim 6's limitations not “purely functional”; functional limitations connected to thread geometry
- Claim 10 (“does not essentially match”) informs POSA “with reasonable certainty ... about the scope of the invention,” *Nautilus v. Biosig Instruments*, 572 U.S. 898, 901 (2014)

POSA Definition

Competing Definitions

Petitioner:

- “[BS] in mechanical engineering, biomedical engineering, materials science engineering, or an equivalent degree”
- “five years of experience working with ... dental implants and prostheses”
- “could also have less formal education but commensurately more practical experience, or vice versa”

Patent Owner:

- “[BS] in mechanical engineering or equivalent technical degree”
- “three years of experience in the field, such as experience with the design of bone implants, anchors, and/or screws”
- “may consult with a dentist, oral surgeon, prosthodontist, or periodontist who has experience with dental implants and prosthetics on patients”

Leinsing is POSA under either definition

Summary

1: Board should reject written-description challenges

- On these facts, law establishes single-species disclosure threshold
 - Multiple structural and functional limitations define narrow genus
 - Predictable art
 - POSA well able to understand specification (BS, 3/5+ yrs experience)
- Figure 75 is enough
- In any event, the specification discloses three species:
 1. Temporary fasteners with asymmetric threads (with or without slots)
 2. Slotted temporary fasteners with symmetric threads
 3. Interference/press fit

2: Board should reject obviousness challenges

- None of four references—*alone or combined*—disclose inventive concept
 - No reference teaches or suggests two screws with mismatched threading screwed into same female threads
- No motivation to combine references to achieve claimed invention

3: Board should reject PGR indefiniteness challenge

- Claim 6's limitations not “purely functional”; functional limitations connected to thread geometry
- Claim 10 (“does not essentially match”) informs POSA “with reasonable certainty ... about the scope of the invention” (*Nautilus*)

Thank You

Learn More:



Appendix

'992 Patent - Claim 9

- [a] A dental system for attachment of a coping to a threaded implant abutment comprising:
- [b] an **implant abutment** having female threading having an implant abutment thread profile;
- [c] a **definitive screw** having a longitudinal axis and a length measured along the axis and a width measured perpendicular to the axis, the definitive screw comprising:
 - [d] a shaft with male threading, wherein the male threading has a **male threading profile that matably threadably engaged and which matches the female threading of the implant abutment**; and a head with a definitive screw drive interface;
- [e] a **coping** having a proximal end with an aperture sized to allow the definitive screw shaft to pass through; and
- [f] a **temporary screw** having a longitudinal **axis** and a length measured along the axis and a **width** measured perpendicular to the axis, the temporary screw comprising:
 - [g] a post comprising **male threading**, wherein the male threading has a **male threading profile that is different from the male threading profile of the shaft of the definitive screw**, and wherein the aperture of the coping is sized and configured to allow the post to pass through; and
 - [h] a head with a temporary screw drive interface, wherein the head to integral to or coupled to the post,
- [i] wherein the temporary screw **holds the coping in position** against the implant abutment for pick-up processing, wherein the male threading of the post of the temporary screw is **configured** to enter the implant abutment and **rotatably engage the female threading of the implant abutment** to a predetermined pick-up processing torque, and
- [j] wherein **threads of the male threading of the post release from threads of the female threading** of the implant abutment with a predetermined **axial pick-up force** in a proximal direction in response to and/or during pick-up processing.

'781 Patent - Claim 6

[a] A dental system comprising:

[b] a **coping** having a proximal end with an aperture; and

[c] an **implant abutment** having threads;

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

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

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

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

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

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

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

'781 Patent - Claim 8

[a] A dental system comprising:

[b] a **coping** having a proximal end with an aperture; and

[c] an **implant abutment** having threads;

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

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

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

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

[h] wherein the shaft of the temporary fastener extends through the aperture of the coping and the distal shaft portion **engages the implant abutment threads** with an engagement depth at a predetermined torque and is **configured** to cause the proximal

portion of the temporary fastener to **hold the coping into alignment with the implant abutment**,

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

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

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

'781 Patent - Claim 10

[a] A dental system comprising:

[b] an **implant abutment** having threads having an **implant abutment threads contour** and an implant abutment longitudinal axis;

[c] a **coping** having a proximal end with a central aperture, and

[d] a **temporary fastener** having a longitudinal axis with a length measured along the longitudinal axis and a width dimension measured perpendicular to the longitudinal axis, the temporary fastener comprising:

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

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

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

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

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

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

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

Specification also includes additional species

- “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’. An exception to this definition will occur only when a combination of elements, functions, steps or acts are in some way inherently mutually exclusive.”

Specification also includes additional species

- “The post may be made of *different materials* than these, or even be of unitary construction with weakened sections that fracture or otherwise breakaway under a desired pick-up axial force.”
- “Metal, metal-reinforced, ceramic, and *polymer* copings, *posts and fasteners* may be included in this and other embodiments.”

Bernhard teaches away from combination

- Bernhard never uses threaded fastener as “provisional connection feature”
- Leinsing:
 - “Bernhard’s advantages centered on eliminating or minimizing screws from the pick-up process. Bernhard criticized existing open-tray techniques, because they ‘require use of devices, such as long processing screws, which interfere with the clinician’s ability to determine and obtain a proper fit for the prosthesis with respect to opposing dentition.’”
 - Bernhard “praised the advantages of minimizing the number of screw-based fasteners,” saying it “provide[s] an efficient workflow,” “can reduce the risk of site contamination and extensive tissue swelling,” and “reduce (e.g., substantially eliminate) the use of screwing and unscrewing components in patients which takes chair time.”

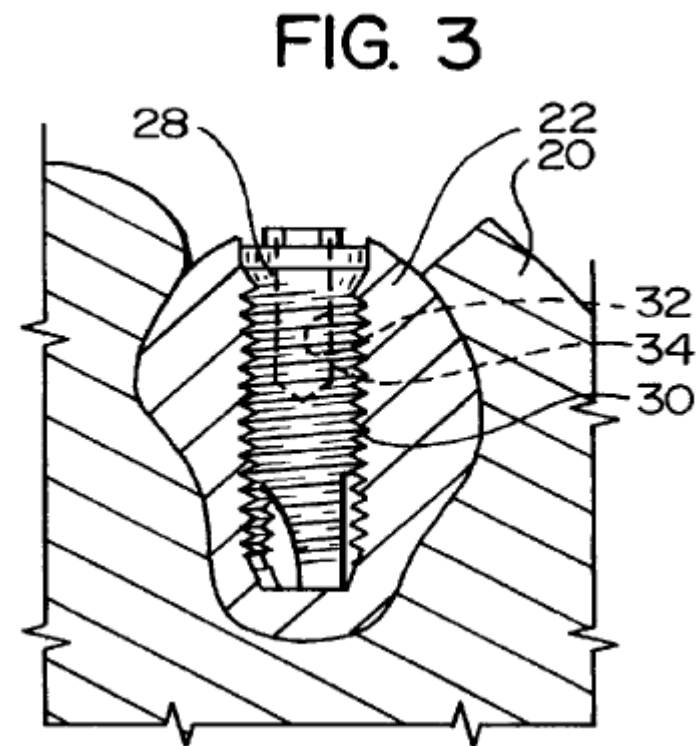
Derey teaches away from combination

- “[F]lexible devices are designed to be used *instead of the screws*”
- Leinsing:
 - “Derey’s deflecting legs are part of a snap-on system with functions that, in a screw-based system, are redundant and needlessly complicated.”
 - “[T]he proposed combination with Derey is another clear signal that Petitioner’s obviousness analysis improperly relies on hindsight reasoning and cherry picking, and uses the ’992 Patent as a template for retroactively combining the prior art.”

Record shows known, understood meaning for “matching” threads

Wade:

- “A metallic fixture insert 28 having a threaded outer surface 30 matching the inner surface 26 is then threaded into the hole 24 in the bone 22 (FIG. 3).”



Record shows known, understood meaning for “matching” threads

Marlin:

- “The post will fit over the previously placed universal adaptor that has been affixed to the implant by an anchoring screw which matches the threads of that particular implant and which receives the fixation screw.”

Thomke:

- “Fastening structures for the fastening of an abutment on the implant of a two-part implant system are known from the state of the art. They are designed, for example, as inner and outer structures that are matched to one another, for example, as an inner and outer thread.”

Record shows known, understood meaning for “matching” threads

Daftary:

- “The bolt part has screw threads *which match* the screw threads in the hole of the implant fixture.”

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

CERTIFICATE OF SERVICE

September 3, 2026

CERTIFICATE OF SERVICE

I hereby certify that on September 3, 2026, I caused a true and correct copy of Patent Owner's demonstrative slides for the consolidated oral hearing to be served via email on Petitioner at the following addresses:

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