United States Court of Appeals for the Federal Circuit

NOBEL BIOCARE SERVICES AG,
Appellant

v.

INSTRADENT USA, INC.,
Appellee

2017-2256

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. IPR2015-01786.

Decided: September 13, 2018

JOHN B. SGANGA, JR., Knobbe, Martens, Olson & Bear, LLP, Irvine, CA, argued for appellant. Also represented by MICHELLE ARMOND, SHEILA N. SWAROOP.

JUSTIN EDWIN GRAY, Foley & Lardner LLP, San Diego, CA, argued for appellee. Also represented by NICOLA ANTHONY PISANO, JOSE L. PATINO.

Before PROST, *Chief Judge*, LOURIE and CHEN, *Circuit Judges*.

LOURIE, *Circuit Judge*.

Nobel Biocare Services AG ("Nobel") appeals from the decision of the U.S. Patent and Trademark Office ("PTO") Patent Trial and Appeal Board ("the Board") in an *inter partes* review ("IPR") holding claims 1–5 and 19 of U.S. Patent 8,714,977 ("the '977 patent") unpatentable. *See Instradent USA, Inc. v. Nobel Biocare Servs. AG*, No. IPR2015-01786, 2017 Pat. App. LEXIS 8329 (P.T.A.B. Feb. 15, 2017) ("*Board Decision*"); *Instradent USA, Inc. v. Nobel Biocare Servs. AG*, No. IPR2015-01786, 2017 WL 1969639 (P.T.A.B. May 10, 2017) ("*Rehearing Decision*"). Because the Board did not err in its anticipation finding, we affirm.

BACKGROUND

I

Nobel owns the '977 patent directed to dental implants. The '977 patent explains that a "feature of the invention" is that "the coronally tapered aspect [of the implant] is designed to allow elastic expansion of the bone while inserting the wider area of the coronally tapered aspect inside the bone and after insertion of the narrow area of the coronally tapered aspect the bone relapses to cover the coronally tapered aspect." '977 patent col. 5 l. 66–col. 6 l. 4; *see also id.* col. 2 ll. 62–66, col. 12 ll. 51–57. The '977 patent further states:

> In another preferred embodiment illustrated in FIG. 12 the coronally tapered region **85** is placed inside the bone so the bone can grow above this region. The tapered region **90** is below the bone level **91**. *The height of the coronally tapered region **85** is 0.5–4 mm*. Preferably the height is 1–3 mm and for most cases 1.3–2.5 mm depending on the diameter of the implant.

Id. col. 12 ll. 10–16 (emphasis added).

Claim 1 is illustrative and reads as follows:

A dental implant comprising:

a body;

a coronal region of the body, the coronal region having a frustoconical shape wherein a diameter of an apical end of the coronal region is larger than a diameter of a coronal end of the coronal region;

an apical region of the body, the apical region having a core with a tapered region wherein a diameter of an apical end of the core is smaller than a diameter of a coronal end of the core and the apical end of the core is substantially flat; and

a pair of helical threads extending from the body along at least a portion of the apical region, each of the threads comprising an apical side, a coronal side, and a lateral edge connecting the apical side and the coronal side, a base connecting the threads to the core, a thread height defined between the lateral edge and the base, the lateral edge having a variable width that is expanded along a segment in the direction of the coronal end of the apical region, so that a least width of the lateral edge of the threads is adjacent the apical end of the apical region and a greatest width of the lateral edge of the threads is adjacent the coronal end of the apical region, and the threads having a variable height that is expanded substantially along the segment of the implant in the direction of the apical end of the apical region, so that a least height of the threads is adjacent the coronal end of the apical region and a greatest height at apical end of the apical region; and

> a bone tap, wherein the helical threads starts at said bone tap and said substantially flat apical end of the core;
>
> wherein each of the helical threads have a thread step that is defined as a distance along a longitudinal axis of the dental implant covered by a complete rotation of the dental implant, the thread step is between 1.5-2.5 mm.

Id. col. 17 l. 51–col. 18 l. 18 (emphasis added). Claim 2 depends from claim 1 and contains the additional limitation "wherein the coronal region has a surface configured to be in contact with bone." *Id.* col. 18 ll. 19–20.

The application that led to the '977 patent claims priority from, *inter alia*, a PCT application filed on May 23, 2004. The undisputed critical date for purposes of pre-AIA 35 U.S.C. § 102(b) (2006)[1] is May 23, 2003. The '977 patent lists Ophir Fromovich, Yuval Jacoby, Nitzan Bichacho, and Ben-Zion Karmon as the inventors.

II

In or about the early 1990s, named inventor Fromovich founded Alpha-Bio Tech Ltd. ("ABT"), which sold dental implants and related goods. He also served as ABT's CEO. In his capacity at ABT, Fromovich conducted dentist trainings and attended industry trade shows and conferences, including the International Dental Show ("IDS") Conference held in Cologne, Germany. At the IDS Conference dental manufacturers would showcase their products and distribute written materials describing their

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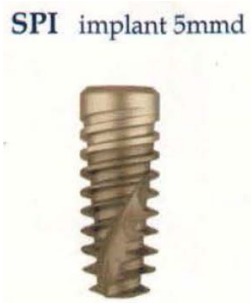
[1] Because the application that led to the '977 patent was filed before March 16, 2013, the pre-Leahy–Smith America Invents Act ("AIA"), Pub L. No. 112-29, 125 Stat. 284 (2011), version of § 102 applies.

products. Nobel acquired ABT and its intellectual property rights in 2008.

III

On October 27, 2014, the U.S. International Trade Commission ("ITC") instituted an investigation of Instradent USA, Inc.'s ("Instradent") Drive CM dental implants based on a complaint filed by Nobel alleging violations of 19 U.S.C. § 1337 by reason of importation of an implant product that infringes the '977 patent and U.S. Patent 8,764,443. Instradent alleged, *inter alia*, that claims 1–5 and 19 of the '977 patent were not infringed and were anticipated by an ABT "Product Catalog" with the date "March 2003" on the cover ("ABT Catalog"). J.A. 1718–75.

The ABT Catalog discloses SPI dental implant screws of various sizes, including a 5 mm implant. J.A. 1732. The 5 mm SPI implant is illustrated as follows:



Id. Below the illustration of the 5 mm SPI screw is the following description: "Implant surface: 'Hybrid' design 2/3 apically S.L.A. (macro) 20-40µ + (micro) 2µ, 1/3 coronary *Acid Etched* 5-10µ. *Increases clot retention and is conducive to bone healing*." *Id.* (emphases added).

Another portion of the ABT Catalog with the heading "Wide platform implant analog for ø5 and ø6mmd" states: "It is possible to use the normal platform on all implants incloding [sic] the ø5 or ø6mmd implants. See illustration above." J.A. 1746. The illustration above includes:

Id.

Fromovich testified about the ABT Catalog during the ITC proceedings. When asked why the catalog says "March 2003" on the cover, Fromovich indicated that he "estimated" it was because "in the end of March 2003, normally it's IDS in Cologne, Germany, [which] is a big exposition. And in this exposition we go in looking for distributor[s]." J.A. 3485. Fromovich testified that ABT had a small booth at and he attended the March 2003 IDS Conference. According to Fromovich, the IDS Conference is "one of the biggest for distribution in Europe" with possibly a thousand attendees. J.A. 3490. He further testified that he did not recall if he brought the ABT Catalog to the conference, but that it was "unlikely." J.A. 3488. He explained that if he brought the ABT Catalog, it would have been a "small amount" of catalogs because it would have been a first version of a 62-page document, and ABT did not send a shipment so it would have had to fit in his luggage. J.A. 3489. Fromovich did not recall the number of ABT Catalogs printed, but estimated between 200 and 500.

Fromovich also testified that the ABT Catalog was used in connection with training courses and provided to attendees without requiring them to sign a confidentiality agreement. Instradent introduced additional evidence, including emails from '977 patent inventor Karmon, that

it alleged established the ABT Catalog's publication prior to the May 2003 critical date.

On October 27, 2015, the ITC's Administrative Law Judge ("ALJ") issued an Initial Determination finding claims 1–5 and 19 of the '977 patent anticipated by the ABT Catalog. On May 11, 2016, the ITC issued a Commission Opinion which determined, *inter alia*, that Instradent had failed to show by clear and convincing evidence that the ABT Catalog is prior art under § 102(b). The ITC construed the phrase "the coronal region having a frustoconical shape" in claim 1 ("frustoconical limitation") as "the coronal region has partly or entirely, a frustoconical shape," J.A. 4797, and held claims 1–5 and 19 not anticipated, but infringed. A panel of this court affirmed without opinion. *See Instradent USA, Inc. v. Int'l Trade Comm'n*, 693 F. App'x 908, 909 (Fed. Cir. 2017).

IV

On August 20, 2015, Instradent petitioned for IPR of claims 1–7, 9, and 13–20 of the '977 patent. Nobel subsequently filed a statutory disclaimer of claims 9 and 13–18 of the '977 patent under 35 U.S.C. § 253(a). The Board instituted IPR of claims 1–5, 19, and 20 on the grounds of unpatentability under 35 U.S.C. § 102 over the ABT Catalog and/or 35 U.S.C. § 103 over other references not at issue on appeal. *Instradent USA, Inc. v. Nobel Biocare Servs. AG*, No. IPR2015-01786, slip op. (P.T.A.B. Feb. 19, 2016), Paper No. 14 ("*Institution Decision*"). In accordance with its then existing regulations, the Board declined to institute IPR over certain other grounds and claims, including the disclaimed claims. *Id.* at *6-7, 27; *see* 37 C.F.R. § 42.108(a); 37 C.F.R. § 42.107(e) ("The patent owner may file a statutory disclaimer under 35 U.S.C. [§] 253(a) in compliance with § 1.321(a) of this chapter, disclaiming one or more claims in the patent. No

inter partes review will be instituted based on disclaimed claims.").

The Board adopted the same construction of the frustoconical limitation as the ITC, *i.e.*, "the coronal region has, partly or entirely, a frustoconical shape." *Board Decision*, 2017 Pat. App. LEXIS 8329, at *20. It explained that "there is nothing that physically or logically prevents the coronal region from 'having' a portion that is frustoconical in shape and a portion that is not." *Id.* at *15. The Board concluded that the specification supported its construction. *Id.* at *16–20.

In addressing public accessibility of the ABT Catalog, the Board considered evidence that had been presented to the ITC,[2] including Fromovich's testimony, and new evidence not considered by the ITC, including the declarations and deposition testimony of Yechiam Hantman and Zvi Chakir. In March 2003, Hantman and Chakir co-owned Chakir Implants, Ltd., a dental supply distributor located in Israel. J.A. 3348 ¶ 2; J.A. 3411 ¶¶ 2–3. Based on prior customer conversations regarding ABT's SPI implant, Hantman stated "it was a specific goal of mine to collect materials from the March 2003 IDS trade show describing the SPI implant." J.A. 3349 ¶ 7. Because Hantman was unable to attend the conference, he requested that Chakir collect catalogs from competitors at the 2003 IDS Conference and give them to him upon his return. Hantman's declaration stated: "Based upon my review of the attached materials and my specific recollections of conversations with customer [sic] in later 2002 and early 2003, and examination of the 2003 [ABT] Cata-

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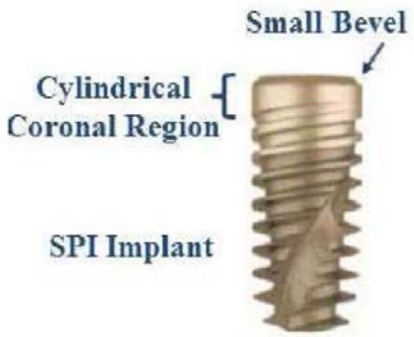
[2] The Board noted it was "not bound by the ITC's fact findings or conclusions," and thus made an "independent determination based on the record in [the] *inter partes* review." *Board Decision*, 2017 Pat. App. LEXIS 8329, at *22.

log after receiving it after the IDS trade show, I am certain that the 2003 [ABT] Catalog was publically accessible to the dental industry, including competitors, in March 2003, after the IDS show that year." J.A. 3352 ¶ 14.

Chakir's declaration stated that he "collected catalogs and other materials from competitors, . . . including [ABT]" at the 2003 IDS Conference and "gave the materials relating to dental implants to Mr. Hantman upon [his] return." J.A. 3412 ¶ 5. At his deposition in 2016, Chakir testified that he did not recall the specific brochures he brought back from the 2003 IDS Conference, and that the 2003 IDS Conference was the only time he collected dental implant brochures because he was not personally interested in dental implants. Chakir testified that gathering brochures "is open to everyone" at the IDS Conference and not done in secret. J.A. 5796–98.

The Board "determine[d] that a preponderance of the evidence establishes that the ABT Catalog qualifies as a prior art printed publication under [pre-AIA] 35 U.S.C. § 102(b)." *Board Decision*, 2017 Pat. App. LEXIS 8329, at *39. The Board found that "the ABT Catalog was made available, without restriction, to members of the interested public at least during the March 2003 IDS Conference," and that "the evidence tends to show that any interested conference attendee could have obtained a copy of the ABT Catalog from the ABT booth during the March 2003 IDS Conference." *Id.* at *37–38.

The Board then applied its construction of the frustoconical limitation to find that the ABT Catalog's disclosure of the SPI 5 mm implant with a frustoconical bevel at the coronal-most portion anticipated claim 1. *Id.* at *40–44. The Board reproduced Nobel's annotated version of the 5 mm implant disclosed in the ABT Catalog:



Id. at *40 (citing Patent Owner Response at 39).

Nobel did not present separate arguments for claims 3–5 and 19, and the Board thus held those claims anticipated as well. *Id.* at *46. With respect to dependent claim 2, the Board assumed *arguendo* that Nobel's proposed construction for "the coronal region has a surface configured to be in contact with bone" to mean "designed or constructed to enhance osseointegration" was correct. *Id.* at *44–45. Applying that construction, the Board found claim 2 anticipated by the ABT Catalog based on the disclosure of acid etching directly beneath the image of the SPI 5 mm implant found to anticipate claim 1. *Id.* at *45–46. The Board upheld the patentability of claims 1–5, 19, and 20 over an obviousness challenge based on different references, a determination from which no party has appealed.

The Board subsequently denied Nobel's request for rehearing based on alleged errors in the Board's construction of the frustoconical limitation. The Board explained that while it had "declined to categorically exclude small bevels from our construction," it "also indicated expressly that the construction adopted in our Final Written Decision did not permit *any* inconsequential variations in edge sharpness to be a frustoconical region." *Rehearing Decision*, 2017 WL 1969639, at *1 (internal quotation marks and citations omitted) (emphasis in original).

Nobel timely appealed the anticipation finding. On appeal, Nobel challenges the Board's holding that the ABT Catalog is prior art, its claim construction, and its anticipation analysis. We address each issue in turn.

DISCUSSION

I. Jurisdiction

We first address whether we have jurisdiction over the entirety of Nobel's appeal. In *SAS Institute, Inc. v. Iancu*, the Supreme Court held that 35 U.S.C. § 318(a) prohibits the Board from instituting IPR on fewer than all claims challenged in a petition. 138 S. Ct. 1348, 1353 (2018). Here, in accordance with its pre-*SAS* regulations, the Board instituted IPR on fewer than all challenged claims and grounds. On appeal, neither party has requested a remand for the Board to consider non-instituted claims or grounds, or any other *SAS*-based relief.

Since the Court's decision in *SAS*, we have addressed similar situations where no party has requested any *SAS*-based relief. In those circumstances, we have held that we have jurisdiction over the appeal, and that any Administrative Procedure Act error committed by the Board in partially instituting IPR was waivable. *See, e.g.*, *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1359–62 (Fed. Cir. 2018); *Jazz Pharm., Inc. v. Amneal Pharm., LLC*, 895 F.3d 1347, 1354–55 (Fed. Cir. 2018). In accordance with our precedent, we conclude that we have jurisdiction over Nobel's appeal under 28 U.S.C. § 1295(a)(4)(A) and are not obliged to reopen non-instituted claims or grounds. We see no reason to exercise any discretion to remand the non-instituted claims or grounds *sua sponte*.

II. Anticipation

We now turn to the merits of the appeal. We review the Board's legal determinations *de novo*, *In re Elsner*, 381 F.3d 1125, 1127 (Fed. Cir. 2004), but we review the Board's factual findings underlying those determinations

for substantial evidence, *In re Gartside*, 203 F.3d 1305, 1316 (Fed. Cir. 2000). A finding is supported by substantial evidence if a reasonable mind might accept the evidence to support the finding. *Consol. Edison Co. v. NLRB*, 305 U.S. 197, 229 (1938).

Anticipation is a question of fact that we review for substantial evidence. *In re Rambus, Inc.*, 753 F.3d 1253, 1256 (Fed. Cir. 2014). A prior art document may anticipate a claim if it describes every element of the claimed invention, either expressly or inherently. *Husky Injection Molding Sys. Ltd. v. Athena Automation Ltd.*, 838 F.3d 1236, 1248 (Fed. Cir. 2016).

A. Public Accessibility

The parties dispute whether the ABT Catalog qualifies as a "printed publication" under pre-AIA § 102(b). Whether a reference qualifies as a "printed publication" is a legal conclusion based on underlying factual findings. *Jazz Pharm.*, 895 F.3d at 1356. The underlying factual findings include whether a reference was publicly accessible. *In re NTP, Inc.*, 654 F.3d 1279, 1296 (Fed. Cir. 2011). In an IPR, the petitioner bears the burden of establishing by a preponderance of the evidence that a particular document is a printed publication. *Medtronic, Inc. v. Barry*, 891 F.3d 1368, 1380 (Fed. Cir. 2018).

"Because there are many ways in which a reference may be disseminated to the interested public, 'public accessibility' has been called the touchstone in determining whether a reference constitutes a 'printed publication' . . . ." *In re Hall*, 781 F.2d 897, 898–99 (Fed. Cir. 1986). "A reference will be considered publicly accessible if it was disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence can locate it." *Medtronic*, 891 F.3d at 1380 (internal quotation marks and citations omitted). "Whether a reference is publicly accessible is determined on a case-by-case basis

based on the 'facts and circumstances surrounding the reference's disclosure to members of the public.'" *In re Lister*, 583 F.3d 1307, 1311 (Fed. Cir. 2009) (quoting *In re Klopfenstein*, 380 F.3d 1345, 1350 (Fed. Cir. 2004)).

We first note that we are not bound by our prior affirmance of the ITC's holding that there was insufficient evidence to find pre-critical date public accessibility. The parties agree that our prior decision is not binding on this factual issue. Oral Arg. at 13:05–14:17, 26:49–28:36. As the Board correctly observed, the evidentiary standard in its proceedings, preponderance of the evidence, is different from the higher standard applicable in ITC proceedings, clear and convincing evidence. *See Board Decision*, 2017 Pat. App. LEXIS 8329, at *22. The Board also had "more evidence on this issue than what was before the ITC." *Id.* Moreover, we apply a substantial evidence standard of review to both ITC and Board factual findings, "and the possibility of drawing two inconsistent conclusions from the evidence does not prevent an administrative agency's finding from being supported by substantial evidence." *Consolo v. Fed. Mar. Comm'n*, 383 U.S. 607, 620 (1966). We thus conclude that our prior affirmance of the ITC's judgment on a different factual record with a different burden of proof does not dictate the outcome of this appeal.

Nobel argues that the Board's finding that the ABT Catalog was publicly accessible at the March 2003 IDS Conference lacks substantial evidence. Nobel contends that the testimony of Chakir, Hantman, and Fromovich does not establish public accessibility and, in any event, the testimony is uncorroborated. Nobel maintains that the Board legally erred by failing to consider the required factors relating to the alleged public disclosure.

Instradent responds that substantial evidence supports the Board's finding of pre-critical date public accessibility. According to Instradent, the testimony of

Hantman and Chakir established that the ABT Catalog was freely distributed at the March 2003 IDS Conference and was sufficiently corroborated. Instradent contends that the other evidence before the Board, including Fromovich's testimony, also supports the Board's finding of public accessibility. Instradent further argues that the Board correctly considered all relevant factors in making its determination.

We agree with Instradent that substantial evidence supports the Board's finding that the ABT Catalog was publicly accessible prior to the critical date. The Board credited Chakir and Hantman's testimony that Chakir obtained a copy of the ABT Catalog at the March 2003 IDS Conference and that Hantman retained that copy in his records thereafter. Hantman's declaration included excerpts of his copy of the ABT Catalog taken from his files. The Board found that Hantman's copy of the ABT Catalog and the copy offered as prior art by Instradent in the IPR had identical pages except for some handwriting on the cover of Hantman's copy. Nobel does not dispute this finding. Hantman and Chakir provided specific details as to why Chakir collected dental implant brochures for Hantman at the March 2003 IDS Conference. Hantman further provided specific details as to why he remembers the circumstances under which he received the ABT Catalog. The Board reasonably credited their combined testimony as supporting its public accessibility finding. *See TypeRight Keyboard Corp. v. Microsoft Corp.*, 374 F.3d 1151, 1159 (Fed. Cir. 2004) (stating that the proffered testimony of two witnesses relating to public accessibility at a trade show "is sufficient to support a jury finding that the Marquardt document is prior art").

Additionally, the ABT Catalog has the date "March 2003" on its cover. Although the ABT Catalog's date is not dispositive of the date of public accessibility, its date is relevant evidence that supports the Board's finding of public accessibility at the March 2003 IDS Conference.

Indeed, Fromovich testified that the catalog likely had the March 2003 date because "the end of March 2003" is "normally" when the IDS Conference is held in Germany. J.A. 3485. No other basis for the March 2003 date has been suggested by Nobel. Moreover, the Board found, and Nobel does not dispute on appeal, that the ABT Catalog is "the type[] of document[] normally intended for public dissemination." *Board Decision*, 2017 Pat. App. LEXIS 8329, at *29. On this record, the mere fact that Nobel elicited testimony on cross-examination that Chakir and Hantman attended post-critical date conferences where ABT had a booth does not indicate that Hantman's copy of the ABT Catalog must have been obtained after the critical date. Substantial evidence supports the Board's public accessibility finding.

We reject Nobel's contentions that Instradent adduced no evidence concerning the circumstances of the ABT Catalog's disclosure at the IDS Conference, and that the Board erred in its analysis of the factors relevant to public accessibility. It is undisputed that ABT had a booth at the 2003 IDS Conference. Although Chakir had no specific recollection of visiting the ABT booth or seeing the ABT Catalog at 2003 IDS Conference, he testified that he collected materials from "all the implant companies that manufacture in Israel" at the conference, J.A. 5801, which included ABT, J.A. 3412 ¶ 5. Chakir also testified about his habitual practice in obtaining product literature, including brochures, at the IDS Conference. Such "[e]vidence of a person's habit . . . may be admitted to prove that on a particular occasion the person . . . acted in accordance with the habit or routine practice." Fed. R. Evid. 406; *see Hall*, 781 F.2d at 899 (holding "that competent evidence of the general library practice may be relied upon to establish an approximate time when a thesis became accessible").

Similarly, Nobel's suggestion that Chakir could have obtained the ABT Catalog "confidentially or under other

circumstances that would not legally constitute public accessibility," Appellant Br. 39, lacks evidentiary basis. Chakir testified that gathering product literature, e.g., brochures, at the IDS Conference "is open to everyone" and that such materials were "outside [the booth such] that everyone on the corridor can take" them. J.A. 5796–98. He further explained that attendees are given a "bag to put [product literature] in . . . so they want you to take it." J.A. 5798. Hantman similarly testified that although he and Fromovich "were not friends, so I couldn't call him and say, send me a catalog. . . . But in a -- in a big event like [the IDS Conference] why not? You can take whatever is open to the public. And Chakir was part of the public." J.A. 6075. The fact that Fromovich would not have specially sent Hantman the ABT Catalog does not imply that the ABT Catalog was not publicly distributed at the 2003 IDS Conference.

Additionally, Nobel points to no evidence that ABT ever distributed the ABT Catalog with an expectation that it would be kept confidential or not disseminated. *See Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1333–34 (Fed. Cir. 2009) (explaining "a binding agreement of confidentiality may defeat a finding of public accessibility" and "'[w]here professional and behavioral norms entitle a party to a reasonable expectation' that information will not be copied or further distributed, 'we are more reluctant to find something a printed publication.'" (quoting *Klopfenstein*, 380 F.3d at 1350–51) (alteration in original)). While Fromovich testified about how he would have used the ABT Catalog if he had brought it to the 2003 IDS Conference, e.g., showing it to potential distributors and doctors, he did not mention confidentiality restrictions or any expectation that the disclosure would not be shared.

Moreover, it is undisputed on appeal that the ABT Catalog is the type of document intended for public dissemination, and it bears no designations, such as "draft"

or "confidential," that might suggest that it was not intended for public distribution. Indeed, Fromovich testified that the ABT Catalog was provided to trainees during training sessions without requiring them to sign a confidentiality agreement. In short, Nobel has pointed to no evidence in the record to dispute the above evidence indicating that the ABT Catalog was distributed without confidentiality obligations and not otherwise under circumstances that could undercut a finding of public accessibility. *See, e.g.*, *Medtronic*, 891 F.3d at 1382 (summarizing "common [public accessibility] considerations about materials that are distributed at meetings or conferences"). We thus perceive no error in the Board's public accessibility finding on this basis.

We next address the sufficiency of the corroboration of the testimony. "[C]orroboration is required of any witness whose testimony alone is asserted to invalidate a patent, regardless of his or her level of interest." *Finnigan Corp. v. Int'l Trade Comm'n*, 180 F.3d 1354, 1369 (Fed. Cir. 1999). Corroborating evidence may include documentary or testimonial evidence. *See TransWeb, LLC v. 3M Innovative Props. Co.*, 812 F.3d 1295, 1301 (Fed. Cir. 2016). Circumstantial evidence can be sufficient corroboration. *Id.* We have articulated a number of factors that may be considered in assessing the sufficiency of the corroboration in prior invention or public use cases:

> (1) the relationship between the corroborating witness and the alleged prior user,
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> (2) the time period between the event and trial,
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> (3) the interest of the corroborating witness in the subject matter in suit,
>
> (4) contradiction or impeachment of the witness' testimony,
>
> (5) the extent and details of the corroborating testimony,

> (6) the witness' familiarity with the subject matter of the patented invention and the prior use,
>
> (7) probability that a prior use could occur considering the state of the art at the time,
>
> (8) impact of the invention on the industry, and the commercial value of its practice.

Woodland Tr. v. Flowertree Nursery, Inc., 148 F.3d 1368, 1371 (Fed. Cir. 1998). We apply a "rule of reason" analysis to the corroboration requirement, *id.* at 1371, which "involves an assessment of the totality of the circumstances including an evaluation of all pertinent evidence," *Adenta GmbH v. OrthoArm, Inc.*, 501 F.3d 1364, 1372 (Fed. Cir. 2007). Sufficiency of corroboration is a question of fact. *Fleming v. Escort Inc.*, 774 F.3d 1371, 1377 (Fed. Cir. 2014).

We disagree with Nobel that corroboration is legally insufficient in this case. The Board found "the testimony of Messrs. Hantman and Chakir not only to be corroborated by each other, but also by a) the actual copy of the ABT Catalog[, dated March 2003,] submitted as evidence and b) Dr. Fromovich's testimony that ABT operated a booth at the March 2003 IDS conference." *Board Decision*, 2017 Pat. App. LEXIS 8329, at *36 (citations omitted). Under the circumstances of this case, this constitutes sufficient corroboration of Hantman and Chakir's testimony relating to the pre-critical date public accessibility of the ABT Catalog.[3]

We reject Nobel's contention that Chakir and Hantman's testimony cannot be corroborated by each other's and Fromovich's testimony. The testimony of one witness

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[3] Because we view this evidence as sufficient for corroboration purposes, we do not address the additional evidence Instradent points to as additional corroboration.

may corroborate the testimony of another witness. *See Sandt Tech., Ltd. v. Resco Metal & Plastics Corp.*, 264 F.3d 1344, 1351 (Fed. Cir. 2001) (explaining in a pre-AIA § 102(g)(2) invalidity challenge that "oral testimony of someone other than the alleged inventor may corroborate an inventor's testimony"). As discussed above, Chakir and Hantman told a coherent story as to how Hantman came into possession of his copy of the ABT Catalog following the 2003 IDS Conference. Details of that story were further corroborated by Fromovich's testimony, particularly that ABT had a booth at the 2003 IDS Conference and the ABT Catalog has a "March 2003" date because that is when the IDS Conference was normally held.

Furthermore, the Board found Chakir and Hantman's testimony credible and rejected Nobel's credibility attacks based on the alleged interest of the witnesses. *See Board Decision*, 2017 Pat. App. LEXIS 8329, at *35–36. In contrast, the Board found Fromovich's failure to "recall bringing a copy of the ABT Catalog to the March 2003 IDS Conference" and "several other critical details unfavorable to [Nobel's] position to lack credibility." *Id.* at *32 n.10. Nobel has not identified a sufficient basis to disturb the Board's credibility determinations in this case. *See Adenta*, 501 F.3d at 1372; *Yorkey v. Diab*, 601 F.3d 1279, 1284 (Fed. Cir. 2010) (explaining "the Board was well within its discretion to give more credibility to [one witness's] testimony over [another's] unless no reasonable trier of fact could have done so").

Nobel's reliance on the *The Barbed-Wire Patent*, 143 U.S. 275 (1892), *Finnigan*, and *Woodland* is misplaced. As we have previously observed, "there are no hard and fast rules as to what constitutes sufficient corroboration, and each case must be decided on its own facts." *TransWeb*, 812 F.3d at 1302. In *The Barbed-Wire Patent* and *Woodland*, the particular testimony offered to prove

an allegedly invalidating prior public use that had occurred decades earlier was held insufficient to satisfy the high burden required to invalidate a patent. *See Barbed-Wire*, 143 U.S. at 288–89 (finding that the witnesses gave inconsistent and insufficient testimony as to the substance of the purported prior art public use); *Woodland*, 148 F.3d at 1373 ("tak[ing] note of the absence of any physical record to support the oral evidence" "despite the asserted many years of commercial and public use"). In *Finnigan*, we held that the completely uncorroborated testimony of one witness concerning his alleged prior public use was insufficient as a matter of law to establish invalidity of the patent. 180 F.3d at 1370. This situation, involving corroboration of a document's date of public accessibility and the testimony of multiple witnesses, is factually distinguishable.

We further reject Nobel's argument that the Board improperly relied upon the ABT Catalog itself in its corroboration analysis, and conclude that its reliance on *Lister*, *Adenta*, and *Fleming* is misplaced. While "the mere existence" of an "undated reference" standing alone is not "prima facie evidence that it was available prior to the applicant's critical date," *Lister*, 583 F.3d at 1317, this is not such a situation. Unlike the hypothetical undated reference in *Lister*, the undated photograph in *Adenta*, and the testimony relating to prior invention in *Fleming*, the asserted reference has a date before the critical date printed on it. And, as discussed above, there is no indication on the face of the document that it was unlikely to have been publicly available as of that date. The date on the reference matching the date the witnesses testified it was publicly accessible constitutes corroboration of public accessibility as of that date. The fact that Hantman had a copy of the ABT Catalog in his files further corroborates his testimony that he obtained a copy of the same document asserted to be prior art in the IPR. Moreover, the rule of reason "analysis 'does not require that every detail

of the testimony be independently and conclusively supported' by the corroborating evidence." *TransWeb*, 812 F.3d at 1301–02 (quoting *Ohio Willow Wood Co. v. Alps S.*, 735 F.3d 1333, 1348 (Fed. Cir. 2013)).

C. Claim Construction[4]

Nobel argues that the Board's anticipation findings for claims 1–5 should be reversed because the Board relied on an erroneous construction of the frustoconical limitation. In an IPR, a patent claim is given "its broadest reasonable construction in light of the specification of the patent in which it appears." *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142 (2016) (quoting 37 C.F.R. § 42.100(b)). We review the Board's ultimate claim constructions *de novo* and its underlying factual determinations involving extrinsic evidence for substantial evidence. *Skky, Inc. v. MindGeek, s.a.r.l.*, 859 F.3d 1014, 1019 (Fed. Cir. 2017), *cert. denied*, 138 S. Ct. 1693 (2018). Here, because the intrinsic record alone determines the proper construction of the frustoconical limitation, we review the Board's construction *de novo*. *See Shire Dev., LLC v. Watson Pharm., Inc.*, 787 F.3d 1359, 1364, 1368 (Fed. Cir. 2015) (citing *Teva Pharm. USA Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 840–42 (2015)).

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[4] Because Nobel does not argue dependent claims 3–5 "separately or attempt to distinguish them from the prior art," they "stand or fall with their attendant independent claim," *i.e.*, claim 1. *In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1330 n.3 (Fed. Cir. 2016); *see also In re Margolis*, 785 F.2d 1029, 1030 (Fed. Cir. 1986) (stating that where dependent claims "were not argued separately, [they] need not be separately considered"). Similarly, because Nobel makes no additional argument with respect to claim 19, we affirm the Board's finding of anticipation given our rejection of Nobel's public accessibility arguments.

Nobel argues that the Board's construction of the frustoconical limitation is overly broad because it "include[s] coronal regions on dental implants with merely 'partly' frustoconical shapes." Appellant Br. 49–50. Nobel maintains that the Board's construction conflicts with the contextual claim language, which specifies an overall shape of the coronal region. Nobel contends that the overly broad construction allows tiny bevels and manufacturing artifacts, *i.e.*, edge breaks, that are not contemplated by the written description to be encompassed by the claims, and thus ignores the specification's teachings that the implant was designed to allow relapse to promote high primary stability in bone. According to Nobel, the correct construction is "the coronal region as a whole has a frustoconical shape." Appellant Br. 50.

Instradent responds that the Board correctly construed the frustoconical limitation in light of the intrinsic record. According to Instradent, the Board correctly construed "having" in the limitation as "open-ended," "similar to how the terms 'comprising' and 'including' are construed." Appellee Br. 47 (citing *Lampi Corp. v. Am. Power Prods., Inc.*, 228 F.3d 1365, 1376 (Fed. Cir. 2000)).

We agree with Instradent that the Board's construction of the frustoconical limitation was reasonable. Claim 1 reads in relevant part: "*the coronal region having a frustoconical shape* [frustoconical limitation] wherein a diameter of an apical end of the coronal region is larger than a diameter of a coronal end of the coronal region." '977 patent col. 17 ll. 53–56 (emphasis added). Contrary to Nobel's contention, the language "*having* a frustoconical shape" does not serve as an adjective that modifies "coronal region" to require that the whole region have that shape. We interpret "having" in light of the claim language context and the specification to determine whether it is open or closed. *See, e.g.*, *Lampi*, 228 F.3d at 1376; *Crystal Semiconductor Corp. v. TriTech Microelectronics Int'l, Inc.*, 246 F.3d 1336, 1348 (Fed. Cir. 2001).

Here, both the claim context and the specification demonstrate that the Board correctly determined that "having" is open-ended. The coronal region thus must contain a frustoconical shape, but other shapes are not excluded.

Turning first to the claim language, the frustoconical limitation itself does not clearly require that the entire coronal region have a frustoconical shape. The wherein clause similarly does not demonstrate that the entire coronal region must have a frustoconical shape. The specified relative diameters of the apical and coronal ends of the coronal region do not limit the coronal region as a whole to a particular shape. Moreover, disclaimed independent claim 9 describes "a variable height being progressively expanded substantially along the *entire threaded region*," '977 patent col. 18 ll. 53–54 (emphasis added), demonstrating that the patentee knew how to specify characteristics for an entire region when it so chose. It did not so choose in the frustoconical limitation.

The written description further supports a construction that includes both partly and wholly frustoconical coronal regions. It is undisputed that the '977 patent discloses figures with both wholly, e.g., figure 12, and partly, e.g., figures 8 and 9, frustoconical coronal regions. It is further undisputed that figures 8 and 9 are encompassed by the Board's construction, but would be excluded by Nobel's proposed construction. Although it is true that "[t]he fact that one construction may cover more embodiments than another does not categorically render that construction reasonable," *PPC Broadband, Inc. v. Corning Optical Commc'ns RF, LLC*, 815 F.3d 747, 755 (Fed. Cir. 2016), "there is a strong presumption against a claim construction that excludes a disclosed embodiment," *In re Katz Interactive Call Processing Patent Litig.*, 639 F.3d 1303, 1324 (Fed. Cir. 2011). Because the claim language does not require the exclusion of those embodiments, and there is no basis in the intrinsic record for excluding them, Nobel has not overcome this presumption.

Accepting *arguendo* Nobel's argument that claim 19 reads on figures 8 and 9 does not yield a different conclusion. While we have observed that "[i]t is often the case that different claims are directed to and cover different disclosed embodiments," we "ha[ve] cautioned against interpreting a claim term in a way that excludes disclosed embodiments, when that term has multiple ordinary meanings consistent with the intrinsic record." *Helmsderfer v. Bobrick Washroom Equip., Inc.*, 527 F.3d 1379, 1383 (Fed. Cir. 2008); *see also Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1305 (Fed. Cir. 2007) ("We normally do not interpret claim terms in a way that excludes disclosed examples in the specification."). Here, "having" can be interpreted consistently with the intrinsic record to cover figures 8 and 9, further demonstrating the correctness of the Board's construction.

We also reject Nobel's arguments premised on its expert's testimony relating to edge breaks and mating bevels being too small to permit bone relapse. Nobel alleges that the patent teaches that the tapered coronal region allows the bone, which is compressed during insertion of the implant, to spring back, i.e., relapse, over the top of the implant with attendant benefits. Assuming *arguendo* such functional considerations should be considered here, Nobel has not demonstrated that the Board's construction would encompass implants that did not satisfy that functional requirement. The '977 patent teaches that "[t]he height of the coronally tapered region 85 is 0.5–4 mm." '977 patent col. 12 ll. 12–13. Nobel has pointed to no evidence that edge breaks and mating bevels would not fall within this height range. *See Board Decision*, 2017 Pat. App. LEXIS 8329, at *17. Indeed, Nobel's expert did not explain what size bevel would be too small. The Board did not err in rejecting Nobel's arguments based on this "unspecific expert testimony." *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1366 (Fed. Cir. 2016), *cert. denied sub nom. Google Inc. v. Arendi*

S.A.R.L., 137 S. Ct. 1329 (2017); *see also Skky*, 859 F.3d at 1022 (explaining "the Board was not required to credit [appellant]'s expert evidence simply because [appellant] offered it").

Similarly, the Board's construction does not read out the frustoconical limitation. The Board clarified that its "construction [does not] permit[] *any* inconsequential variations in edge sharpness to be a 'frustoconical region.'" *Board Decision*, 2017 Pat. App. LEXIS 8329, at *17 (emphasis in original); *accord Rehearing Decision*, 2017 WL 1969639, at *1. Nobel points to no evidence that the bevel relied upon by the Board in its anticipation analysis is outside of the size range for the coronal region taught by the '977 patent. *See* '977 patent col. 12 ll. 12–13.

Nobel's argument with respect to the prosecution history was untimely raised, and the Board thus did not pass upon it. *Rehearing Decision*, 2017 WL 1969639, at *2. Nobel has not explained why we should consider this untimely argument for the first time on appeal. We thus decline to do so. *See HTC Corp. v. IPCom GmbH & Co., KG*, 667 F.3d 1270, 1282–83 (Fed. Cir. 2012).

D. Claim 2

Nobel argues that the Board's finding that claim 2 is anticipated lacks substantial evidence because the ABT Catalog provides no teaching or depiction that the bevel of the 5 mm SPI implant has any surface treatment designed to enhance osseointegration. Instradent responds that the Board's anticipation finding is supported by substantial evidence.

We agree with Instradent that the Board's finding that claim 2 was anticipated is supported by substantial evidence. As the Board stated, "[t]here is no dispute that the acid etching taught by the ABT Catalog would result in a 'surface configured to be in contact with bone.'"

Board Decision, 2017 Pat. App. LEXIS 8329, at *45. Instradent's expert testified that the acid etching teaching applied to the entire top third of the coronal region, including the frustoconically shaped bevel, and that using the normal platform the bone would grow over the exposed bevel of the 5 mm SPI implant. This testimony in combination with the express disclosure of the ABT Catalog is substantial evidence sufficient to support the Board's anticipation finding.

We have considered Nobel's remaining arguments, but conclude that they are without merit.

CONCLUSION

For the reasons set forth above, we affirm the Board's anticipation finding.

AFFIRMED