

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PROPEL ORTHODONTICS, LLC,
Petitioner,

v.

ORTHOACCEL TECHNOLOGIES, INC.,
Patent Owner.

Case IPR2018-00296
Patent 9,662,184 B2

Before HYUN J. JUNG, SCOTT A. DANIELS, and
JOHN D. HAMANN, *Administrative Patent Judges*.

DANIELS, *Administrative Patent Judge*.

DECISION
Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

A. Background

Petitioner Propel Orthodontics, LLC, (“Petitioner”) filed a Petition to institute an *inter partes* review of claims 1–27 of U.S. Patent No. 9,662,184 B2 (“the ’184 patent”). Paper 2 (“Pet.”). Orthoaccel Technologies, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 7 (“Prelim. Resp.”). In addition, the Board granted Petitioner’s request for a Reply to Patent Owner’s Preliminary Response, which was subsequently filed by Petitioner. Paper 8 (“Reply”).

We have authority to determine whether to institute an *inter partes* review under 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a). On April 24, 2018, the Supreme Court held that, if an *inter partes* review is instituted, a final written decision under 35 U.S.C. § 318(a) must decide the patentability of all claims challenged in the petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018).

Upon considering the Petition, Preliminary Response, Reply, and the evidence of record, we determine that Petitioner has shown a reasonable likelihood that it would prevail with respect to at least claim 1 of the challenged claims. Accordingly, we institute an *inter partes* review of all the challenged claims, claims 1–27, as set out in the Order included with this Decision.

B. Additional Proceedings

Petitioner states that the ’184 patent is asserted against it in Case No. 3:17-cv-03801-RS in the United States District Court, Northern District of California. Pet. 66. Petitioner also identifies *OrthoAccel Technologies, Inc. v. Propel Orthodontics, LLC, et al.*, No. 18-1534 (Fed. Cir. 2018) (Appeal of

Order Denying Motion for Preliminary Relief entered in Case 3:17-cv-03801-RS, on January 3, 2018). Paper 6.

C. The '184 Patent

The '184 patent (Ex. 1001), titled “Vibrating Dental Devices,” describes an orthodontic device, e.g., a vibrating “bite plate,” and “method for movement of one or more teeth by applying differential vibration to selected areas of a bite plate.” Ex. 1001, 7:32–34. By way of example, bite plate 1 as shown in Figure 2A is reproduced below.

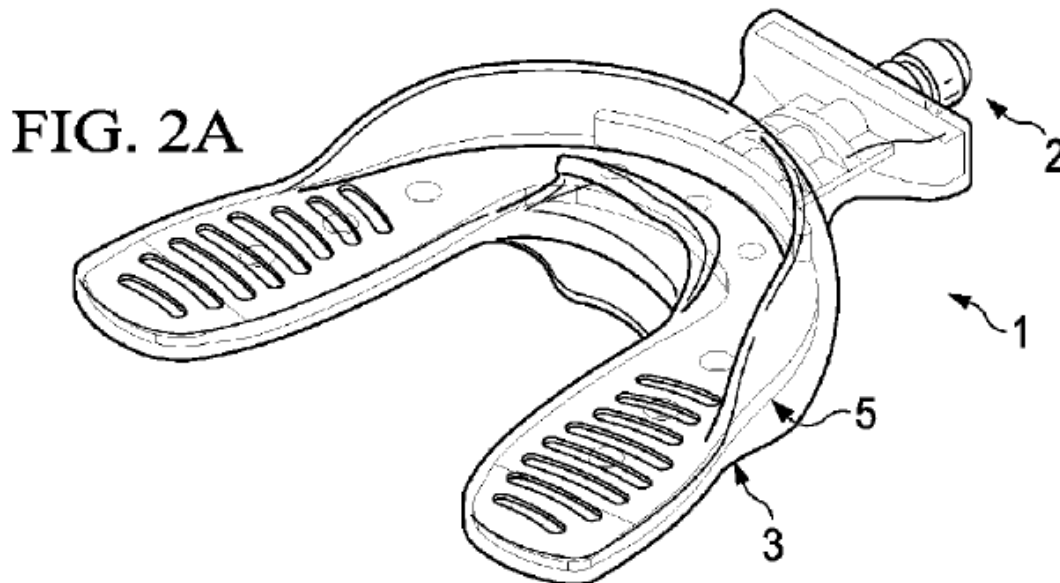


Figure 2A of the '184 patent, above, depicts bite plate 1 having connector 2 for attaching a motorized extraoral vibratory device (not shown). *See id.* at 7:53–54. The '184 patent explains that compared to conventional static force orthodontic devices “[a] faster method of orthodontic remodeling for a patient [is] wearing a vibrating orthodontic remodeling device for about 20 minutes a day to accelerate[] tooth movement.” *Id.* at Abstract.

D. Illustrative Claim

Of the challenged claims, claims 1, 10, and 19 are independent. Each of dependent claims 2–9, 11–18, and 20–27 depend directly or indirectly from respective independent claims 1, 10, and 19. All of the claims are method claims. Claim 1 illustrates the claimed subject matter and is reproduced below:

1. A faster method of orthodontic remodeling, comprising:
 - a) a patient wearing an orthodontic appliance biting an orthodontic remodeling device, said orthodontic remodeling device comprising:
 - i) an extraoral housing containing a power source operably coupled to an actuator operably coupled to a processor that controls said actuator;
 - ii) said extraoral housing operably connected to an intraoral U-shaped bite plate;
 - iii) said bite plate having upper and lower vertical rims on a facial edge thereof to contact both arches of teeth; and
 - iv) wherein during use said orthodontic remodeling device is held in place only by teeth clamping on the bite plate and said orthodontic remodeling device vibrates at a frequency from 0.1 to 400 Hz; and
 - b) *activating said orthodontic remodeling device for 1 to 20 minutes daily;*
wherein said method provides accelerated tooth movement as compared to without using said orthodontic remodeling device.

Ex. 1001, 13:28–49 (emphasis added).

E. The Alleged Grounds of Unpatentability

Petitioner contends that the challenged claims are unpatentable on the following specific grounds.¹

| References | Basis | Claims Challenged |
|----------------------------|-------|-----------------------|
| Lowe ² | § 102 | 1–8, 10–16, and 19–26 |
| Lowe and Ting ³ | § 103 | 9, 17, 18, 26, and 27 |
| Lowe and Mao ⁴ | § 103 | 9, 17, 18, 26, and 27 |

II. CLAIM CONSTRUCTION

A. Legal Standard

In an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard).

“Under a broadest reasonable interpretation, words of the claim must be given their plain meaning, unless such meaning is inconsistent with the specification and prosecution history.” *Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016). If the specification “reveal[s] a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess[,] . . . the inventor’s lexicography governs.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005) (en

¹ Petitioner supports its challenge with a Declaration of Dr. Sumit Yadav, (Ex. 1002). Correspondingly, Patent Owner supports its Preliminary Response with a Declaration of Dr. Michael Ricupito, (Ex. 2001). *See infra*.

² Ex. 1003, U.S. Patent Appl’n. Pub. 2008/0227046 A1 (Sept. 18, 2008).

³ Ex. 1012, WO 2007/146187 A2 (Dec. 21, 2007).

⁴ Ex. 1013, U.S. Patent No. 7,029,276 B2 (Apr. 18, 2006).

banc) (citing *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002)). We apply this standard to the claims of the '184 patent.

B. wherein said . . . accelerated tooth movement is about 0.5 mm per week

Dependent claims 9, 17, 18, 26, and 27 include the limitation “wherein said . . . accelerated tooth movement is about 0.5 mm per week.” Petitioner argues that this limitation should be given no patentable weight as it “merely states the intended result of the limitations in the claim.” Pet. 33. Patent Owner does not address this, or any other claim construction issue. *See* Prelim. Resp., Table of Contents.

By way of example, Claim 9 recites:

The method of claim 1, wherein said orthodontic remodeling device vibrates at about 30 Hz and about 0.2 N and said accelerated tooth movement is about 0.5 mm per week.

Ex. 1001, 13:64–67. At least the first portion of the “wherein” clause above in dependent claim 9 recites a step that does, on its face, appear to be material to patentability—that is “said orthodontic remodeling device vibrates at about 30 Hz and about 0.2 N.” This initial portion of the limitation and method step explains *how* such “accelerated tooth movement” is brought about. *See Hoffer v. Microsoft Corp.*, 405 F.3d 1326, 1329 (Fed. Cir. 2005) (“[W]hen the ‘whereby’ clause states a condition that is material to patentability, it cannot be ignored in order to change the substance of the invention.”).

The second “accelerated tooth movement” portion of the clause is supported by the Specification, for instance by Example 5, describing an embodiment where “[t]he overall movement rate during the study was 0.526 mm per week, which is higher than average movement without the device.”

Ex. 1001, 12:53–55. The claim is explicit that the recited “accelerated tooth movement” has a particular rate. *Id.* at 13:66–67. The rate “about 0.5 mm per week,” is a reasonably concrete value, providing some modicum of textual definitiveness that is more than superfluous narrative. *Id.* Thus, it is not clear to us at this point in the proceeding that the specifically recited tooth movement rate of “about 0.5 mm per week” is merely an intended result or laudatory phrase. *C.f. Minton v. Nat’l Ass’n of Sec. Dealers, Inc.*, 336 F.3d 1373, 1381 (Fed. Cir. 2003) (“A whereby clause in a method claim is not given weight when it simply expresses the intended result of a process step positively recited.”). For purposes of this Decision, we treat the limitation of “about 0.5 mm per week” as a requirement of dependent claims 9, 17, 18, 26, and 27.

We remind the parties that our claim construction determination in a decision on institution is preliminary in nature. *See TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1068 (Fed. Cir. 2016) (“[T]he Board is not bound by any findings made in its Institution Decision. At that point, the Board is considering the matter preliminarily without the benefit of a full record. The Board is free to change its view of the merits after further development of the record, and should do so if convinced its initial inclinations were wrong.”). Therefore, the parties are free in their respective briefs to advocate different positions than what we have preliminarily adopted here.

III. ANALYSIS

We turn now to Petitioner’s asserted grounds of unpatentability and Patent Owner’s arguments in its Preliminary Response to determine whether Petitioner has met the threshold standard of 35 U.S.C. § 314(a).

A. The Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art “would have formal orthodontic training and would have several years of experience as a working orthodontist.” Pet. 32–33 (citing Ex 1002 ¶ 51). Patent Owner asserts that a person of ordinary skill has “a degree in orthodontics or equivalent experience and/or education in osteogenesis and bone remodeling in the context of tooth movement.” Ex. 2001 ¶ 5.

The parties’ levels of ordinary skill are different in that Patent Owner’s contention appears to include persons who do not have a formal degree in orthodontics but are trained in the related field of osteogenesis and bone remodeling “in the context of tooth movement.” *Id.* Having reviewed the parties’ asserted levels of skill in the art in conjunction with the prior art, we determine, for purposes of this Decision, that the level of ordinary skill in the art includes a person with a degree in orthodontics and several years of experience as a working orthodontist, and also a person with an education and several years of experience in osteogenesis and bone remodeling, or an equivalent field, in the context of tooth movement.

B. A Question of Priority under 35 U.S.C. § 120

A threshold question in this proceeding is whether or not Lowe is § 102(b) prior art to the claims of the ’184 patent. This question turns on whether the ’184 patent’s claims are entitled to the benefit of earlier filing dates of related applications (which include Lowe) under 35 U.S.C. § 120.

The ’184 patent claims the benefit of at least Lowe’s July 5, 2007 filing date via a series of related continuation applications and a continuation-in-part application. *See* Ex. 1001, Related U.S. Application Data, *see also* Pet. 12, Prelim. Resp. 2. Petitioner, however, contends that

“[t]he claims of the ’184 patent cannot claim priority before November 9, 2009 because there is no support for the claim limitation ‘1 to 20 minutes daily’ prior to that date.” Pet. 9–33. Thus, Lowe, which was filed more than one year before the application which became the ’184 patent, is § 102(b) prior art to the ’184 patent, according to Petitioner. *Id.* On the other hand, Patent Owner asserts that Lowe is not invalidating prior art because the claims of the ’184 patent are properly supported by the parent application disclosure and thus “entitled to at least the filing date of Lowe,” July 5, 2007.⁵ Prelim. Resp. 1.

In order for a later filed U.S. patent application to obtain the benefit of the filing date of an earlier U.S. patent application, 35 U.S.C. § 120 requires, under 35 U.S.C. § 112, sufficient written description of the invention claimed in the later filed application in the earlier application.⁶ To be clear, this threshold written description issue is a question of fact—whether a person of ordinary skill in the art would understand from the disclosure in Lowe that the inventor had possession of the invention at the time of the filing of the earlier application. *See Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (“This inquiry, as we have long held, is a question of fact. Thus, we have recognized that determining whether a patent complies with the written description requirement will necessarily vary depending on the context.” (internal citation omitted)).

⁵ Michael K. Lowe is the sole inventor of the ’184 patent, and the first named inventor of the Lowe reference (Ex. 1003), U.S. Appl’n No. 11/773,849.

⁶ Either priority date implicates pre-AIA 35 U.S.C. § 120, and hence the written description requirement under “the first paragraph of section 112” as a necessity to obtain the benefit of the parent application’s earlier filing date.

Both parties have submitted declaration testimony consistent with their divergent positions. *Compare* Ex. 1002 ¶¶ 27–50 *with* Ex. 2001 ¶¶ 4–33. Contending that the claimed range of “1 to 20 minutes” is not supported by the parent application, Petitioner’s Declarant, Dr. Yadav, states that

orthodontists are generally a conservative group, and that the use of vibration was an unproven technology back in July of 2007 when the Parent Application was filed, one of ordinary skill in the art would be inclined to interpret approximately or about 20 minutes very narrowly. For example, one skilled in the art would not interpret “about 20 minutes” to include anything but slight variations from 20 minutes, at most a range from 19–21 minutes. One skilled in the art would certainly not assume one minute would be a suitable duration based on this disclosure.

Ex. 1002 ¶ 37. Patent Owner’s Declarant, Dr. Ricupito, disagrees that orthodontists, generally as a group, are conservative. Ex. 2001 ¶ 20. Dr. Ricupito’s contradicting testimony explains that a person of ordinary skill in the art would understand the disclosure in the parent application of “about 20 minutes”

as including the claimed range of 1–20 minutes for several reasons. First, at the time of the invention (and continuing today), it was not unusual in orthodontics and dentistry to use devices for very short periods like 1 to 2 minutes. For example, the amount of time recommended for tooth brushing is about two minutes and . . .

Second, contrary to Dr. Yadav’s testimony (Ex. 1002 at ¶44), one of ordinary skill would have been well-aware of the principle that there is a generally inverse relationship between frequency and time . . . Thus, for patients who can tolerate a higher amount of force or whose teeth react more readily to such force, the amount and directionality of static forces can be changed more quickly and the course of treatment progresses faster.

Ex. 2001 ¶¶ 21–22.

At this point in the proceeding, and considering the testimony, we are not so persuaded by either declarant over the other as we are apprised that there is a factual dispute as to whether or not one of ordinary skill in the art would have recognized a range of 1–20 minutes from the parent application’s description of “about 20 minutes.” *Compare* Ex. 1001, 13:45–49 *with* Ex. 1003 ¶ 39. In addition, under 37 C.F.R. §42.108(c), we must take into account such testimonial evidence, including Patent Owner’s testimonial evidence, “but a genuine issue of material fact created by such testimonial evidence will be viewed in the light most favorable to the petitioner solely for purposes of deciding whether to institute an inter partes review.” Therefore, at this early stage of the proceeding, and based on the conflicting testimonial evidence before us with respect to sufficiency of the written description, we determine that the parties have raised a genuine issue of material fact that is most appropriate for development during a trial.

C. Claims 1–8, 10–16, and 19–26—Alleged anticipation by Lowe

Petitioner asserts that claims 1–8, 10–16, and 19–26 are anticipated by Lowe. Pet. 37–56. Patent Owner’s Preliminary Response does not address Petitioner’s anticipation and obviousness challenges based on Lowe, and relies apparently, at this point in the proceeding, on its assertion that the ’184 patent is entitled to the benefit of at least the July 5, 2007 filing date of Lowe.

Lowe

Lowe discloses an apparatus and “[m]ethods of inducing tooth movement” using a U-shaped intraoral bite plate 20 and an extraoral vibration source 30. Ex. 1003, Abstract, ¶ 33. Intraoral bite plate 20 is held

between a patient's teeth during a remodeling procedure, as shown below in Figure 1 reproduced from Lowe.

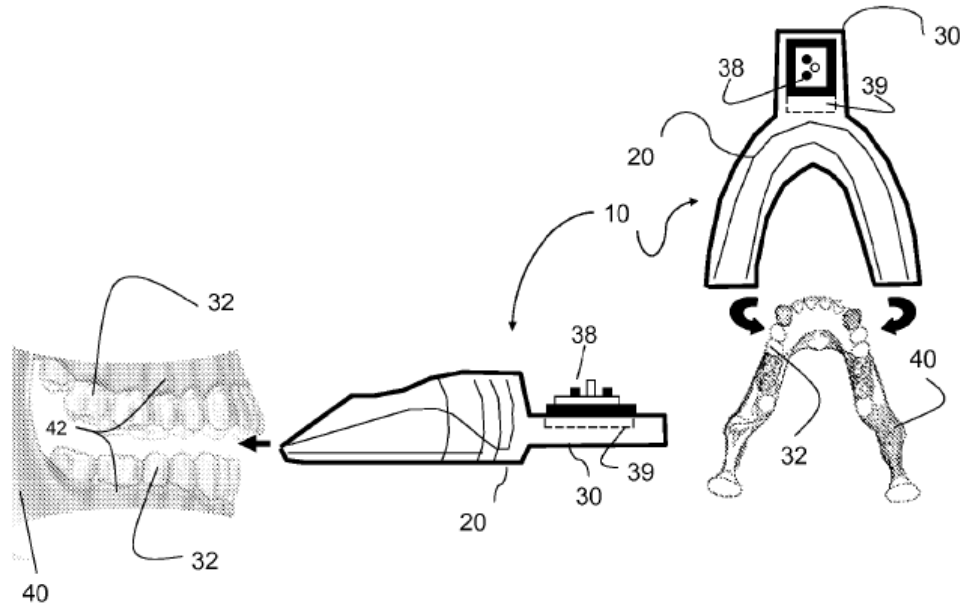


FIG. 1

Lowe's Figure 1, above, illustrates bite plate 20 and vibration source 30, the bite plate for insertion in patient's jaw 40. *Id.* ¶ 33. Lowe states that one embodiment of the device “transmits a force of about five Newtons (5N) for about twenty minutes a day at a frequency of between 0.1 to 400 Hz.” *Id.* ¶ 39 (emphasis added).

Claim 1

Petitioner argues that Lowe discloses all the limitations of claim 1, including “[a] faster method of orthodontic remodeling,” because Lowe states that “[i]n accordance with one embodiment of the system, non-static forces are used to accelerate the remodeling of craniofacial bones in

conjunction with orthodontic treatment.” Pet. 37–39 (citing Ex. 1003 ¶¶ 16, 42). Petitioner also points to persuasive evidence in Lowe of “an orthodontic device” having an “extraoral housing containing a power source” connected to “an intraoral U-shaped bite plate,” that is used by a patient who clamps the bite plate between their teeth during a remodeling procedure. Pet. 39–49 (citing Ex. 1003 ¶¶ 7, 8, 33, 36, 37, 40, 44, 68, Figs. 1, 3, 11, claims 5, 6, 15, 16; Ex. 1002 ¶¶ 63–70, 74–75).

According to Petitioner, Lowe discloses also the limitation of vibrating the orthodontic device “between about 0.1 Hertz to about 400 Hertz,” as called for in claim 1. *Id.* at 49 (citing Ex. 1003 ¶ 37; Ex. 1002 ¶ 75). In addition, Petitioner points to Lowe’s disclosure that its orthodontic device “can transmit a force of about five Newtons (5N) **for about twenty minutes a day** at a frequency of between 0.1 to 400 Hz as discussed above.” *Id.* (citing Ex.1003 ¶ 39). Petitioner argues that because Lowe discloses the value of “about 20 minutes a day,” this is within the claimed range of “1 to 20 minutes daily,” and therefore anticipates the range claimed in the ’184 patent. *Id.* (citing *Ineos USA LLC v. Berry Plastics Corp*, 783 F.3d 865, 869 (Fed. Cir. 2015) (A “range is anticipated by a prior art reference if the reference discloses a point within the range.”)).

Finally, Petitioner argues that Lowe anticipates the “intended result of the process steps set forth in the claim,” namely “accelerated tooth movement,” because Lowe describes that

[t]he system enhances the traditional orthodontic treatment process with the application of non static forces. In accordance with one embodiment of the system, non-static forces are used to accelerate the remodeling of craniofacial bones in conjunction with orthodontic treatment.

Id. (citing Ex. 1003 ¶ 16).

On the evidence before us, we are persuaded that Petitioner has established a reasonable likelihood of success in showing that Lowe discloses “[a] faster method of orthodontic remodeling,” and all the elements recited in claim 1.

IV. SUMMARY

For the reasons expressed above, we determine that Petitioner has demonstrated a reasonable likelihood of showing that at least claim 1 among the challenged claims is unpatentable. In accordance with SAS and the Director’s guidance, we institute a trial on all challenged claims and all asserted grounds of unpatentability.

Our review of the Petition under 35 U.S.C. § 314 is not to determine whether an individual asserted fact is indisputable or whether a preponderance of the evidence supports Petitioner. Our review is to determine whether the totality of the information presented in the Petition, Preliminary Response, and Reply shows that there is a reasonable likelihood that Petitioner would prevail with respect to at least one of the claims challenged in the Petition. We determine that Petitioner has established the requisite reasonable likelihood that Petitioner will prevail as to claim 1.

This is a decision to institute an *inter partes* review under 35 U.S.C. § 314. Our factual findings and determinations at this stage of the proceeding are preliminary, and based on the evidentiary record developed thus far. This is not a final decision as to the patentability of claims for which *inter partes* review is instituted. Our final decision will be based on the record as fully developed during trial.

V. ORDER

For the reasons given, it is

ORDERED that *inter partes* review of the '184 patent is hereby instituted as to claims 1–27 on the following grounds.

1. Claims 1–8, 10–16, and 19–26 as anticipated by Lowe;
2. Claims 9, 17, 18, 26, and 27 as obvious over Lowe and Ting;
and
3. Claims 9, 17, 18, 26, and 27 as obvious over Lowe and Mao;
and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial on the grounds of unpatentability authorized above; the trial commences on the entry date of this decision.

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For PETITIONER:

Christopher S. Schultz
Cory C. Bell
David R. Lefebvre
Eric P. Raciti
FINNEGAN, HENDERSON,
FARABOW, GA
christopher.schultz@finnegan.com
cory.bell@finnegan.com
david.lefebvre@finnegan.com
eric.raciti@finnegan.com

For PATENT OWNER:

Paul V. Storm
John J. May
Michael Dubner
GARDERE WYNNE SEWELL LLP
pvstorm@gardere.com
jmay@gardere.com
mdubner@gardere.com