

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CLEARCORRECT OPERATING LLC,  
Petitioner,

v.

ALIGN, INC.,  
Patent Owner.

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Case IPR2017-01829  
Patent 8,038,444

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Before JOSEPH A. FISCHETTI, KEVIN TURNER and JOSIAH C.  
COCKS, *Administrative Patent Judges*.

FISCHETTI, *Administrative Patent Judge*.

DECISION  
Denying Institution of *Inter Partes* Review  
*37 C.F.R. § 42.108(a)*

## I. INTRODUCTION

### A. Summary

ClearCorrect Operating LLC (“Petitioner”) filed a Petition (Paper 1, “Pet.”) to institute an *inter partes* review of claims 1–42 of U.S. Patent No. 8,038,444 (Ex. 1001, “the ’444 patent”). Align, Inc., (“Patent Owner”) filed a Preliminary Response (Paper 7, Prelim. Resp.) on November 10, 2017.

An *inter partes* review may not be instituted unless the information presented in the Petition shows “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). For the reasons set forth below, we conclude that the information presented in the Petition fails to establish a reasonable likelihood that Petitioner will prevail in showing the unpatentability of at least one of claims 1–42 of the ’444 patent. Accordingly, we do not institute an *inter partes* review as to those claims.

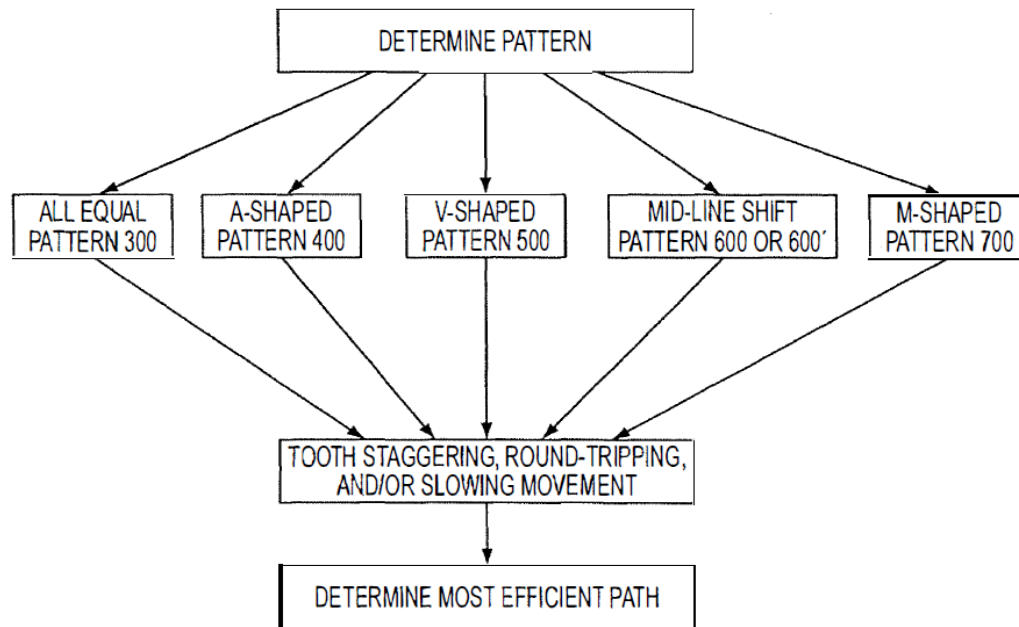
### B. Related Matters

The parties do not identify any cases pending in District Court, nor any related U.S. Patent which is the subject of post-grant proceedings. Pet. 2; Paper 4, 1. Patent Owner does identify an issued U.S. Patent and pending U.S. Patent Applications as related. Paper 4, 1.

### C. The ’444 patent

The ’444 patent is titled “AUTOMATED TREATMENT STAGING FOR TEETH.” Ex. 1001, (Title). The ’444 patent describes the invention as “systems, and methods for automated staging of teeth, from an initial position to a final, corrected position.” *Id.* at 2:6–8. The ’444 Patent explains that, “[d]epending upon the particular needs of the patient, the

patient's teeth are scheduled to move according to various movement patterns, routes, rates, and/or distances; and the need for utilizing tooth staggering, round-tripping, and/or slowing techniques.” *Id.* at 2:8–12. Figure 2B of the '444 patent is reproduced below showing a flow diagram illustrating a plurality of patterns and options for optimizing the movement of a patient's teeth during treatment.



#### *D. Illustrative Claims*

Of the challenged claims, claims 1, 15, and 29 are independent. Claims 2–14 ultimately depend from claim 1, claims 16–28 ultimately depend from claim 15, and claims 30–42 ultimately depend from claim 29. Claims 1, 15, and 29 are reproduced below:

1. A computer-implemented method for staging the movement of a plurality of dental objects, the method comprising:

receiving, at a host computer, an electronic representation of

each dental object of the plurality of dental objects in relation to one another;

receiving, by the host computer, an electronic representation of a desired final position for each respective dental object; and

determining, by the host computer, an order of movement for each respective dental object such that the dental objects avoid colliding with or obstructing each other on their respective routes from said initial position to said desired final position through at least one of staggering and round-tripping of at least one dental object.

15. A system for staging the movement of a plurality of dental objects, the system comprising:

means for receiving an electronic representation of each dental object of the plurality of dental objects in relation to one another; means for receiving an electronic representation of a desired final position for each respective dental object; and

means for determining an order of movement for each respective dental object such that the dental objects avoid colliding with each other on their respective routes from said initial position to said desired final position.

29. A machine-readable medium having stored thereon a plurality of instructions for staging the movement of a plurality of dental objects, the plurality of instructions when executed by a processor, causing the processor to:

receive an electronic representation of each dental object in relation to one another in an initial position;

receive an electronic representation of a desired final position for each respective dental object; and

determine an order of movement for each respective dental object such that the dental objects avoid colliding with each other on their respective routes from said initial position to said desired final position.

*Id.* at 15:38–51, 17:49–60.

*E. The Prior Art*

Petitioner relies on the following prior art references:

Reference	Issue Date	Exhibit No.
U.S. Patent No. US 6,729,876 issued to Chishti et al. (“Chishti ’876”)	May 4, 2004	1004
U.S. Patent No. 6,471,511 issued to Chishti et al. (“Chishti ’511”)	Oct. 29, 2002	1005

*F. Asserted Grounds of Unpatentability*

Petitioner challenges claims 1–42 under 35 U.S.C. § 103 as unpatentable over Chishti ’876 either alone or in combination with Chishti ’511. Pet. 20, 44.

II. ANALYSIS

*A. Claim Construction*

In an *inter partes* review, a claim in an unexpired patent shall be given its broadest reasonable construction in light of the specification of the patent in which it appears. 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). Consistent with the broadest reasonable construction, claim terms are presumed to have their ordinary and customary meaning as understood by a person of ordinary skill in the art in the context of the entire patent disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Nonetheless, 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 banc) (citing *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002)).

In its Petition, Petitioner states that the ’444 patent explicitly defines the claim terms “staggering” and “round tripping”. Pet. 16, 17. Petitioner, cites to column 12, lines 44–48 of the ’444 patent (Pet. 16), for the explicit definition for “staggering” as:

*delaying one or more teeth from moving one or more stages where it would otherwise move in order to prevent another tooth from colliding with and/or obstructing the path of the delayed tooth.*

Ex. 1001, 12:44–48.

Petitioner, cites to column 12, lines 51–55 of the ’444 patent (Pet. 17), for the explicit definition of “round tripping” as:

*moving a first tooth out of the path of a second tooth, and once the second tooth has moved sufficiently, moving the first tooth back to its previous position before proceeding to a desired final position of that first tooth.*

Ex. 1001, 12:51–55.

Petitioner also makes reference to the Declaration of Dr. James Mah. (Pet. 17, *citing* Ex. 1003, ¶¶ 72–73, 81–85) concerning the claim terms “staggering” and “round tripping,” and concludes that a person of ordinary skill in the art would understand “staggering” and “round tripping” to refer to the explicit definitions set forth in the ’444 patent.

On the record before us, and for purposes of this Decision, we apply the explicit definitions for the terms “staggering” and “round tripping,” as defined in the ’444 patent.

Independent claim 15 and dependent claims 16–28 are system claims. Petitioner contends claims 15–28 contain means-plus-function limitations, invoking 35 U.S.C. § 112, ¶ 6. *Id.* at 18. Petitioner states that the structure corresponding to the recited means is found in the '444 patent at 3:42–52, 4:42–5:28, 5:40–41, 6:17–20, 6:27–38, 7:12–14, 12:57–59. *Id.* at 19. But, independent claim 15 contains three distinct elements each described using means-plus-function language. Petitioner states only generally what it considers as pertinent sections of the '444 patent in a single blanket listing, without deference to each separately recited claimed function. *See id.*

The required content of a Petition is set forth in 37 C.F.R. § 42.104. In particular, 37 C.F.R. § 42.104 (b)(3) is reproduced below:

(3) How the challenged claim is to be construed. Where the claim to be construed contains a means-plus-function or step-plus-function limitation as permitted under 35 U.S.C. 112(f), the construction of the claim must identify the specific portions of the specification that describe the structure, material, or acts corresponding to each claimed function[.]

Based on the record before us, we find Petitioner's statements concerning claims 15–28 insufficient to identify the specific portions of the specification of the '444 patent that describe the structure, material, or acts corresponding to each claimed function as required by 37 C.F.R. § 42.104 (b)(3). Accordingly, Petitioners have failed to properly construe the means-plus-function terms, and thus have failed to demonstrate adequately how challenged claims 15–28 are to be construed. Therefore, we deny the Petitioner's request to institute *inter partes* review for claims 15–28. *See id.*

Petitioner and Patent Owner propose contrasting interpretations of the claim 1 limitation, “through at least one of staggering and round-tripping of at least one dental object.” Petitioner contends that the limitation, determining an order of movement “through at least one of staggering and round-tripping of at least one dental object,” is met by the “disclosure of either staggering or round-tripping . . . .” Pet. 18. Patent Owner cites to *SuperGuide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 886 (Fed. Cir. 2004) for its contention that “the ‘at least one of’ preceding the ‘staggering and round-tripping’ connotes a conjunctive list rather than a disjunctive list.” Prelim. Resp. 8. We determine that the claims in *SuperGuide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 886 (Fed. Cir. 2004) are distinguishable from claims 1–14 of the ’444 patent because first, the claim construction in *SuperGuide* was fact specific. *Cf. Rowe Int’l Corp. v. Ecast, Inc.* 500 F. Supp. 2d 891, 909 (N.D. Ill. 2007). Second, claim 1 in *SuperGuide Corp.* used means-plus-function language<sup>1</sup> which requires corresponding structure for the full algorithm, and thus a computer configured to effect the claimed functions would need to be programmed for both options. When 35 U.S.C. § 112, ¶ 6 is invoked, the corresponding computer structure must be a “special purpose computer programmed to perform the disclosed algorithm.” *WMS Gaming Inc. v. Int’l Game Tech.*,

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<sup>1</sup> Claim 1 of U.S. Patent 5,038,211 (one of *SuperGuide*’s patents in suit) recites in pertinent part “means for receiving television program schedule information, said television program schedule information comprising at least one of program start time, program end time, program service, and program type for a plurality of television programs; . . . .”

184 F.3d 1339, 1349 (Fed. Cir. 1999), (citing *In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994) (en banc)).

In contrast, the process claim 1 in the '444 patent is a series of steps for staging the movement of a plurality of dental objects which we construe as being accomplished by one of “staggering” and “round-tripping.” Our construction here is consistent with the '444 patent's Specification describing that teeth “may be ‘staggered,’ ‘round-tripped,’ *and/or* slowed.” Ex. 1001, *see* col., 9, ll. 31–33, col. 10, ll. 40–41 (emphasis added).

At this time, we determine that it is not necessary to construe expressly any other claim term of the '444 patent. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

## *B. Alleged Obviousness*

### *1. Overview of Chishti '876*

Chishti '876 is titled “TOOTH PATH TREATMENT PLAN.” Ex. 1004 at [54]. Chishti '876's Figure 7 is reproduced below.

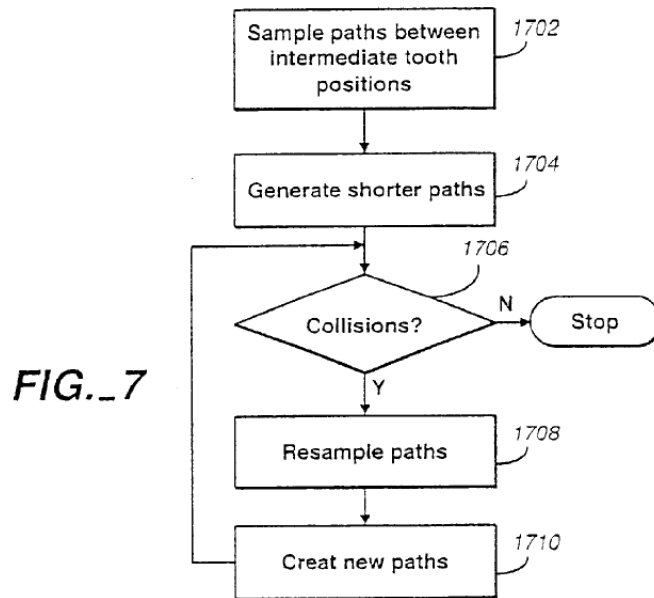


Figure 7 above depicts a flowchart of a process for optimizing a collision-free path of a tooth from an initial position to a final position. *Id.* at 5:51–52; 14:25–27. Sampling each path occurs at two points (step 1704) between treatment steps (1702) and, for each tooth, a calculation is made for a more linear treatment path that fits among the sample points (step 1704). *Id.* at 14:30–34. A collision detection algorithm is applied to determine whether collisions result from the altered paths (step 1706). *Id.* at 14:34–36. In the event that collisions result from the altered paths, the altered paths (step 1708) are resampled and then alternative paths are constructed (step 1710). *Id.* at 14:36–39. This process continues in this manner until no collisions occur (step 1712). *Id.* at 14:39–40.

In some embodiments,

a path scheduling algorithm ... determines the rate at which each component, i.e., each tooth, moves along the path from the initial position to the final position. The path scheduling algorithm determines the treatment path while avoiding "round-tripping," i.e., while avoiding moving a tooth along a distance greater than

absolutely necessary to straighten the teeth. Such motion is highly undesirable, and has potential negative effects on the patient.

*Id.* at 14:43–51.

2. *Discussion—Obviousness over Chishti '876 taken alone*

Independent claim 1 of the '444 patent is drawn to a method for staging the movement of a plurality of dental objects, the method including the step of:

determining, by the host computer, an order of movement for each respective dental object such that the dental objects avoid colliding with or obstructing each other on their respective routes from said initial position to said desired final position through at least one of staggering and round-tripping of at least one dental object.

Petitioner alleges that Chishti '876 discloses all the features of claim 1. Pet. 20–44. Petitioner also relies on the declaration testimony of Dr. James Mah. *Id.* at 26–27, 31, 34–36 (citing Ex. 1003). Petitioner advances that the treatment plan in Chishti '876 can incorporate both “staggering and “round tripping.” Pet. 21 (citing Ex. 1004, 11:59–60, 14:46–51).

Patent Owner, however, contends that Chishti '876 explicitly teaches away from “round tripping,” citing the disclosure in Chishti '876 that the treatment path avoids “round tripping.” Prelim. Resp. 53 (citing Ex. 1004, 14:46–50). Additionally, Patent Owner argues that “round tripping” motion is highly undesirable. Prelim. Resp. 53 (citing Ex. 1004, 14:50–51). We are persuaded that Patent Owner’s position is correct because Chishti '876 uses the terms “while avoiding” and “highly undesirable” in connection with the use of “round tripping,” so that Chishti '876 sufficiently discourages the practice of “round tripping” enough to teach away from that practice. *See*

*United States v. Adams*, 383 U.S. 39, 52 (1966).

Independent claim 1 alternatively requires “staggering.” See Section II. A. To meet this limitation, Petitioner relies on Chishti ’876’s disclosure of, “[t]he algorithm then resorts to less direct routes to the final positions only if collisions will occur,” and “[c]onsiderations on when a tooth may be moved include...which teeth need to be moved before others are moved.” Pet. 26 (citing Ex. 1004, 14:55–58, 11:43–60). Petitioner then attempts to extrapolate from Chishti ’876’s general teachings, arguing that a person of ordinary skill in the art would have understood them to be the equivalent of “staggering” as defined in the ’444 patent. Pet. 26–27 (citing Ex. 1003 ¶¶ 72–73).

We are unpersuaded by Dr. Mah’s testimony that one of ordinary skill in the art would have understood the above-noted disclosure in Chishti ’876 to be equivalent to the ’444 patent’s explicit definition of “staggering.” Although Chishti ’876 generally contemplates consideration of the order in which teeth are to be moved, Chishti ’876 fails to disclose the specific act of “*delaying* one or more teeth from moving one or more stages where it would otherwise move in order,” which is a requirement of “staggering” as defined by the ’444 patent. More particularly, Chishti ’876 is silent as to any consideration of purposefully “delaying” the movement of a tooth from where it otherwise would move, and Dr. Mah’s testimony fails to explain why this missing disclosure would be known by ordinarily skilled artisans. In fact, Dr. Mah’s testimony ultimately uses the words of the ’444 patent definition (*see* Ex. 1003 ¶ 73) to define “staggering” without regard to the general teachings cited by Petitioner from Chishti ’876.

With regard to independent claim 29, Petitioner’s assertions of

unpatentability simply reference the arguments made for independent claim 1.<sup>2</sup> Pet. 40. Independent claims 1 and 29 differ in scope from one another.<sup>3</sup> Because the determining steps of claims 1 and 29 are substantially different from one another, and because Petitioner applies the same citations and arguments made for claim 1, Petitioner fails to specify where each element of claim 29 is found in the prior art patent relied upon. *See* 37 CFR § 42.104 b(4).

### 3. *Overview of Chishti '511*

Chishti '511 is titled “DEFINING TOOTH-MOVING APPLIANCES COMPUTATIONALLY.” Ex. 1005 at [54]. Chishti '511's Figure 5A is reproduced below.

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<sup>2</sup> Petitioner also cites to Chishti '876 at column 23, lines 7–32, but this section only discloses system specific device parts, e.g., storage medium, processor, input/output devices, etc., which do not further disclose features of the determining step of claim 29.

<sup>3</sup> Independent claim 29 does not require “through at least one of staggering and round-tripping” but instead recites instructions to “determine an order of movement for each respective dental object such that the dental objects avoid colliding with each other on their respective routes from said initial position to said desired final position.”

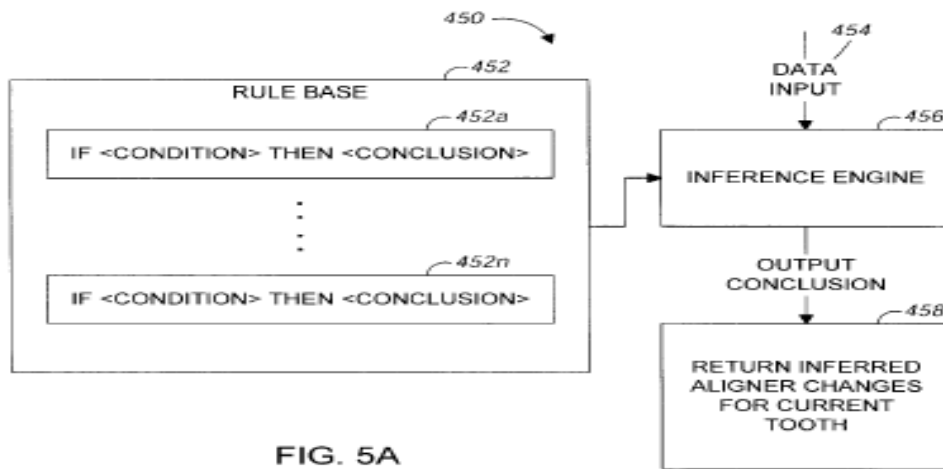


FIG. 5A

Figure 5A above illustrates an implementation of computing an aligner change in a region of a current tooth (step 450). *Id.* at 7:23–25. A rule-based inference engine 456 is used to process input data 454 and a set of rules 452a–452n in a rule base of rules 452. *Id.* at 7:24–27. The result is a production system which acts on the factual input data and produces a set of output conclusions which specify the changes to be made to the aligner in the region of the current tooth (output 458). *Id.* at 7:28–32.

4. *Discussion—Obviousness over Chishti '876 in view of Chishti '511*

In the Petition, Petitioner alleges where it believes all of the features of claim 1 are accounted for based on the teachings of Chishti '876 and Chishti '511. Pet. 47–50. Petitioner also relies on the declaration testimony of Dr. Mah for claim 1 and other claims. *Id.* at 50, 53–58 (citing Ex. 1003). Petitioner relies on Chishti '511 to meet the claimed “round tripping” feature. *Id.* at 50. Petitioner acknowledges that “Chishti '511 describes ‘round-tripping’ differently than the '444 patent (compare Ex.1005, 4:13–16,

with Ex. 1001, 12:51–55) . . . .”<sup>4</sup> *Id.* Petitioner, however, then attempts to extrapolate from Chishti ’511’s definition of “round tripping” to arrive at the ’444 patent’s definition. Pet. 50 (citing Ex. 1003 ¶¶ 81–85). Petitioner concludes that a person of ordinary skill in the art would have understood “that, as used in the field of orthodontics, round-tripping is a broad concept related to moving one tooth more than required, and moving it back again, in order to accommodate the movement of a second tooth.” *Id.*

Assuming arguendo, that Dr. Mah’s statement is correct, i.e., that generally “the concept of round tripping’ has been described and applied to a number of scenarios involving undesirable tooth movements” (Ex. 1003 ¶ 85), this does not and cannot obviate the explicit definition of “round tripping” which the ’444 patent specifies, Petitioner acknowledges, and we have adopted. *See Hoechst Celanese Corp. v. BP Chems. Ltd.*, 78 F.3d 1575, 1578 (Fed. Cir. 1996). Petitioner admits the claim terms “round tripping” and “staggering” are entitled to their respective explicit definitions. *See* Pet. 16, 17. The ’444 patent explicitly and clearly defines “round tripping,” and thus the term speaks for itself.<sup>5</sup> *See Hoechst Celanese Corp.* 78 F.3d 1575, 1578. Dr. Mah’s statements regarding round tripping in general do not contradict this explicit definition of “round tripping,”<sup>6</sup> but in

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<sup>4</sup> The ’511 patent states: “Round-tripping is any motion of a tooth in any direction other than directly toward the desired final position.” Ex. 1005, 4:13–16.

<sup>5</sup> The ’444 patent issued by first action allowance without any file history except for an Examiner’s Reasons for Allowance, which only restates the pertinent language of claim 1. *See* Ex. 3001.

<sup>6</sup> *See* Section II.A.

fact actually describe it in much the same way as in the '444 patent's definition. *See* Ex. 1003 ¶ 82. Yet, as we note above, the record reflects that the “round tripping” described in Chishti '511 is something different than the “round tripping” required by the '444 patent.

Independent claim 1 alternatively requires “staggering.” *See* Section II. A. To meet this limitation, Petitioner again relies on Chishti '876's disclosure and references the arguments advanced by its case for unpatentability over Chishti '876 alone. *See* Pet. 50. For the same reasons we found these arguments unpersuasive above, they are likewise unpersuasive for this ground.

As discussed above, independent claims 1 and 29 differ in scope from one another. Once again, with regard to independent claim 29, Petitioner's assertions of unpatentability reference the same arguments made for independent claim 1.<sup>7</sup> Pet. 40. Petitioner has, thus, failed to show how the construed claim is unpatentable under the statutory grounds since the determining step of claim 29 is substantially different from the corresponding step in claim 1. Thus, Petitioner fails to specify where each element of claim 29 is found in the prior art patent relied upon. *See* 37 CFR § 42.104 (b)(4).

We conclude that Petitioner has failed to present a credible basis for concluding that all of the features of claims 1, 15, and 29 are accounted for

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<sup>7</sup> Petitioner also cites to Chishti '511 (Pet. 63 (citing Ex. 1005, 2:34–39, 3:36–39, 10:19–51)), but these sections of Chishti '511 only disclose system specific device parts, e.g., computer program product, computer medium, conventional digital computer, etc., which do not further disclose features of the determining step of claim 29.

in the teachings of Chishti '876 alone or in view of Chishti '511. In light of our review of the record before us, we determine that Petitioner has not demonstrated a reasonable likelihood of establishing that claims 1, 15, and 29, and claims ultimately dependent on those claims, are unpatentable based on Chishti '876 taken alone or, alternatively, taken in combination with Chishti '511. Thus, we determine that Petitioner has not demonstrated a reasonable likelihood that “at least 1 of the claims challenged in the petition” is unpatentable. *See* 35 U.S.C. § 314(a).

### III. CONCLUSION

Having evaluated the Petition, its underlying supporting evidence, and Patent Owner’s Preliminary Response, we determine that Petitioner has not shown a reasonable likelihood that any of claims 1–42 of the '444 patent are unpatentable.

### IV. ORDER

It is  
ORDERED that the Petition is *denied*; and  
FURTHER ORDERED that that no trial or *inter partes* review is instituted for any claims of the '444 patent on any ground presented in this proceeding.

IPR2017-01829  
Patent 8,038,444

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