UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CLEARCORRECT OPERATING, LLC,
Petitioner,

v.

ALIGN TECHNOLOGY, INC.,
Patent Owner.

Case No. IPR2025-00814
Patent No. 10,456,217

PATENT OWNER'S PRELIMINARY RESPONSE PURSUANT TO 37 C.F.R. § 42.107

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I. INTRODUCTION

The Board should not institute *inter partes* review of claims 1-22 of U.S. Patent No. 10,456,217 ("the '217 patent") because petitioner ClearCorrect Operating, LLC ("ClearCorrect" or "Petitioner") has not met its burden of showing a reasonable likelihood of prevailing on its sole proposed ground of unpatentability.

The petition advances a single, four-reference obviousness ground over Chishti-511, Chishti-876, Sachdeva, and Becker. Each independent claim of the '217 patent is directed to a computer-based treatment plan. The method includes steps, among others, of "defining a schedule of movement of the dental objects during treatment stages as each of the dental objects moves from a respective initial position toward a respective final position" and performing a computer-implemented modification to planned movement including a step of "***round tripping***" in its schedule of movement. As petitioner acknowledges, the term "round tripping," as used in the '217 patent has a specific definition involving moving a first tooth out of the path of a second tooth, then moving the first tooth back after the second tooth has passed by. Pet., 9.

In a prior IPR of U.S. Patent No. 8,038,444 (the '444 patent), a parent of the '217 patent with similar claims, the same Petitioner advanced a combination of the same Chishti-511 and Chishti-876 references (the "Chishti patents"). The Board

denied institution, finding that not only did these references fail to teach inclusion of the step of "round-tripping" in a scheduled movement of teeth in an orthodontic treatment plan, but that Chishti-876 explicitly *teaches away* from employing such a step. *ClearCorrect Operating LLC v. Align Technology, Inc.*, IPR2017-01829, Paper 10 at 11-12; EX1008, 11-12. Indeed, Chishti-876 expressly instructs that its treatment path algorithm *avoid* a "round-tripping" movement, which it describes as "highly undesirable, and has potential negative effects on the patient." EX1005, 14:46-51.

Despite this prior art content and the Board's previous findings, the present petition nevertheless turns specifically to Chishti-876 as providing a computer-based treatment plan that includes a schedule of movements. Yet, the petition never addresses Chishti-876's instruction to avoid "round tripping" movements or the Board's prior finding that Chishti-876 teaches away from including such steps, which it plainly does. The vast majority of the petition's motivation argument (Pet. 20-29) lacks a single word directed to Chishti-876 and the petition never addresses, anywhere, the identified prior art content disparaging "round-tripping." Likewise, the petition's discussion of "round-tripping" as recited in the challenged claims (element 1(e)) ignores Chishti-876 entirely. Pet. 44-49. This is particularly remarkable because the petition proposes employing the movement patterns of Chishti-876 specifically. *See, e.g.*, Pet. 30 ("combine Chishti-876's teachings

regarding the use of movement patterns…"), 36 (employing Chishti-876 because "its algorithm draws upon a library of predetermined tooth-treatment patterns.").

The petition's reliance on this reference while assiduously avoiding any discussion of Chishti-876's disparagement of the very tooth movement patterns now claimed is inexcusable. It is black letter law that an obviousness inquiry under *Graham* must consider the full scope of the prior art teachings, including prior art that teaches away from what is claimed. Both the Board and the Federal Circuit have confirmed that a petitioner fails to meet its burden of proof—or even meaningfully addresses *prima facie* obviousness—where it fails to address known prior art that teaches away from the combination proposed. Here, the shortcomings of the obviousness challenge are particularly remarkable where petitioner critically relies on Chishti-876 to provide tooth movement patterns but ignores the reference's instruction to avoid the very tooth movements claimed.

Petitioner's head-in-the-sand approach is not excused by pivoting to the Becker reference, which discusses an entirely different treatment modality. Specifically, Becker discusses a wire-and-bracket system (e.g., conventional "braces") where an orthodontist iteratively makes adjustments during in-person patient visits over time. Even if considered in isolation, Becker at best shows that round-tripping was an option in limited circumstances involving wire-and-bracket treatment. But Becker fails to address the use of such steps in aligner treatment,

unlike Chishti-511 or Chishti-876. Of course, prior art references are not considered in isolation during an obviousness inquiry, but none of the cited prior art rebuts Chishti-876's teaching to avoid using "round-tripping" in its movement patterns.

As such, Petitioner fails to show that a person of ordinary skill in the art would have been motivated with a reasonable expectation of success to practice the claimed invention.

Accordingly, institution of *inter partes* review should be *denied*.

II. OVERVIEW OF '217 PATENT

The '217 patent describes inventions relating to "[a]pparatus, systems, and methods… to facilitate teeth movement utilizing clear, removable teeth aligners as an alternative to braces"; for example, it describes the "automated staging of teeth, from an initial position to a final, corrected position." EX1001, 1:33-49, 2:10-22. It discloses computer-implemented methods to schedule the repositioning of patients' teeth according to "movement patterns," including patterns "utilizing tooth staggering, round-tripping, and/or slowing techniques." EX1001, 2:10-22.

In contrast to treatment with braces, in which wires are manually adjusted by the orthodontist to move teeth reactively, aligner treatment involves treatment planning in which a detailed path of teeth is calculated in advance. For example, in aligner treatment, an entire set of aligners to move teeth along a route is

manufactured together. EX1001, 5:25-41. The ’217 patent discloses methods for generating initial treatment plans, predicting problems that would arise from following the plan such as tooth collisions, and selecting among options for variations of those plans, with complex tooth movements including types of movement that prior art treatment planning systems were not capable of performing. *See* EX1001, 7:63-8:27. Examples of complex tooth movements taught by the ’217 patent include “staggering, slowing down and/or round-tripping” of teeth, either individually or in combination. EX1001, 12:63-13:21.

The third of these listed options, “round-tripping,” has a specific definition provided by the ’217 patent: “‘Round-tripping’ is the technique of 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.” EX1001, 13:7-11. Using the treatment planning techniques disclosed by the ’217 patent allows the generation of treatment plans that include round-tripping in appropriate cases, including “cases where teeth may collide with or obstruct one another during movement.” EX1001, 12:63-13:21.

In one exemplary embodiment, the computer program generating a treatment plan with complex tooth motion considers different operations in a particular order; specifically, the “computer program first attempts staggering of the teeth

movement, followed by slowing-down/interim key frames if the staggering does not avoid collisions, and then followed by round-tripping as a last resort." EX1001, 13:13-17. However, contrary to Petitioner's suggestion (Pet., 5), the ordering in this specific embodiment in no way suggests disfavoring round-tripping; in the same paragraph, the '217 patent teaches that "staggering, slowing down and/or round-tripping can be suitably applied alone or in combination, and **in any order**."[1] EX1001, 13:11-13. Thus, while the '217 patent describes one possible order of evaluation (staggering, then slowing, then round-tripping), it discloses it as an option on the same footing as the other complex tooth movements that can be incorporated into its treatment planning software. *See, e.g.*, EX1001, Fig. 9 (identifying round-tripping as the second of three options); *see also id.*, Abstract, 2:10-22, 3:1-4, 12:63-13:21, 13:51-61, 14:15-26, 15:24-39 (repeatedly discussing round-tripping throughout specification).

Each independent claim of the '217 patent recites a step of "round-tripping." For example, claim 1 recites as follows:

> 1. A method comprising:
>
> selecting a movement pattern from a plurality of movement patterns for moving dental objects from an initial arrangement toward a final arrangement, the dental objects being based on output of a scanning

[1] Emphases added unless otherwise indicated.

device, the movement pattern defining a schedule of movement of the dental objects during treatment stages as each of the dental objects moves from a respective initial position toward a respective final position;

calculating, by a computer processor, a respective treatment path for each of the dental objects between its respective initial and final positions;

identifying, by a computer processor, a collision between a first of the dental objects and a second of the dental objects based at least on one of the respective treatment paths; and

performing, by a computer processor, a first modification of the schedule of movement in response to the identifying, the first modification comprising:

round-tripping the first dental object.

EX1001, claim 1. The other independent claim, claim 11, recites a non-transitory computer-readable medium comprising instructions causing a processor to perform steps corresponding to the steps of claim 1, including the final step of performing a modification including "round-tripping the first dental object." EX1001, claim 11.

III. CLAIM CONSTRUCTION

As stated in the petition, the parties in the related district court proceeding (*Align Technology, Inc. v. ClearCorrect Operating, LLC*, Case No. 6:24-cv-00187-ADA-DTG (W.D. Tex. Apr. 11, 2024)) jointly agreed to claim constructions for two terms in the '217 patent that match definitions provided in the specification.

Pet., 9 (citing EX1013, 8). Petitioner has confirmed that these are the constructions it applies in the grounds. Pet., 9.

Only one of these constructions involves a term found in the independent claims of the '217 patent: round-tripping is defined 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." *Id.*; EX1001, 13:7-11. As explained below, Petitioner fails to meet its burden for any independent claim, as Petitioner fails to show that the references in its sole combination teach or suggest the "round-tripping" step recited in the independent claims.

IV. PETITIONER'S SOLE GROUND OF UNPATENTABILITY FAILS

The petition advances a single ground alleging obviousness of the claims of the '217 patent. That ground—ground 1—alleges that claims 1-20 would have been obvious over a four-reference combination: U.S. Patent No. 6,471,511 to Chishti et al. ("Chishti-511") in view of U.S. Patent No. 6,729,876 to Chishti et al. ("Chishti-876"), further in view of U.S. Patent No. 6,250,918 to Sachdeva et al. ("Sachdeva"), and still further in view of a paper (*The Orthodontic Treatment of Impacted Teeth*) to Becker et al. ("Becker"). Pet., 3.

As explained below, the petition fails to show why a person of ordinary skill in the art (POSITA) would have been motivated with reasonable expectation of

success to arrive at the claimed invention. As the Board correctly found in the IPR of the ’217 patent’s parent, the ’444 patent, Chishti-876 teaches away from the round-tripping recited in the claimed invention. Petitioner does not dispute the content of Chishti-876 or the finding from the Board; Petitioner instead omits countervailing evidence from its analysis.

The Board also correctly found that while Chishti-511 uses the word “round-tripping,” its use of the word refers to an entirely different concept than the meaning of the term in the ’217 patent. Petitioner also does not dispute this finding, it actually agrees to a different meaning of the term. *Supra* §III. Yet it ignores its own agreed upon claim construction and repeats its misuse of terminology when discussing Chishti-511, treating its reference to “round-tripping” as though it spoke to the round-tripping recited in the ’217 patent’s claims.

And finally, unable to find any prior art teaching of round-tripping applicable to the treatment modality of Chishti-876 and Chishti-511 (i.e., aligner treatment planning), Petitioner turns instead to a different treatment modality: Becker’s wire-and-bracket treatment using braces. But Petitioner fails to show why a POSITA would have been motivated by Becker’s teachings to employ round-tripping in the context of aligner treatment, especially in light of more relevant art (Chishti-876) expressly teaching that using such treatment methods in aligners was harmful to patients.

A. A Challenge Failing to Address Known Prior Art Teaching Away is Incurably Defective

The petition is incurably defective for failing to address Chishti-876's teaching away from the modification the petition proposes in its combination.

Where there is a known prior art teaching away, this teaching must be squarely addressed in the petition materials. It is black letter law that the full "scope and content of the prior art" must be determined when assessing obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1969). This includes prior art teachings disparaging a modification that would lead to the claimed invention. *E.g.*, *United States v. Adams*, 383 U.S. 39, 52 (1966) (recognizing teaching away when "known disadvantages in old devices which would naturally discourage the search for new inventions").

A reference is said to teach away when a POSITA "would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994). A finding of obviousness can be entirely precluded where a reference teaches away from the claimed invention. *In re Mouttet*, 686 F.3d 1322, 1333 (Fed. Cir. 2012) ("A reference that properly teaches away can preclude a determination that the reference renders a claim obvious."). For example, where a reference suggests that a line of development relating to the limitation at issue is "unlikely to be productive of the result sought by the

applicant," the reference teaches away, indicating nonobviousness. *Gurley*, 27 F.3d at 553.

The Federal Circuit has explained, "as a 'useful general rule,' that references that teach away cannot serve to create a prima facie case of obviousness." *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1354 (Fed. Cir. 2001) (quoting *Gurley*, 27 F. 3d at 553 (Fed. Cir. 1994)); *see also id.* ("If references taken in combination would produce a 'seemingly inoperative device,' we have held that such references teach away from the combination and thus cannot serve as predicates for a prima facie case of obviousness." (quoting *In re Sponnoble*, 405 F.2d 578, 587 (C.C.P.A. 1969))).

Consistent with this rule, the Board has repeatedly denied institution where a petition advanced prior art combinations while failing to squarely address teachings in the references that undermine or teach away from the combination. *See, e.g.*, *Medivators Inc. v. Arc Med. Design Ltd.*, IPR2021-00707, Paper 17 at 24-25 (finding petitioner failed to meet burden for institution where one reference taught away from proposed combination and the petition materials did not "squarely address this teaching away"); *Par Pharm., Inc. v. Jazz Pharms. Ireland Ltd.*, IPR2016-00002, Paper 12 at 12-13 (finding no reasonable likelihood of prevailing where "Petitioner does not account for the prior art's teaching away" from proposed modification). A clear discussion of a reference's teaching away is

essential to a proper weighing of the teachings of the prior art, and failure to include such analysis renders a petition incomplete. *See, e.g.*, *Mylan Pharms. Inc. v. Novo Nordisk A/S*, IPR2023-00722, Paper 9 at 42-43 (Oct. 2, 2023) (denying institution, finding "Petitioner's analysis incomplete for failing to address" an "express teaching" away from proposed modification because petitioner failed to explain how "one of ordinary skill in the art would have weighed" the teaching away against purported benefits); *cf. Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1363 (Fed. Cir. 2017) ("Evidence suggesting reasons to combine cannot be viewed in a vacuum apart from evidence suggesting reasons not to combine.").

Here, there is no question that one of the references relied on in the petition—Chishti-876—teaches away from the petition's proposal to add round-tripping functionality to software for aligner treatment planning. After all, the Board itself found this to be the case. In a decision denying institution for an *inter partes* review petition brought by ClearCorrect against the parent of the '217 patent, the '444 patent, the Board agreed that Chishti-876 taught away from round-tripping, noting that "Chishti '876 uses the terms 'while avoiding' and 'highly undesirable' in connection with the use of 'round tripping.'" EX1008, 11. Based on Chishti-876's disclosure in this passage, the Board concluded that "Chishti '876 sufficiently discourages the practice of 'round tripping' enough to teach away from

that practice." *Id.*; *cf. SynQor, Inc v. Vicor Corp.*, 988 F.3d 1341, 1351 (Fed. Cir. 2021) ("Factual determinations made by the expert agency entrusted by Congress to make those determinations—and to make them finally—need not be endlessly reexamined."); EX1002, 246-47, 303-04 (indicating allowability of claims based on Board's findings).

This finding of the Board is on strong footing and, in fact, not disputed here. Chishti-876 is directed to treatment planning software for scheduling treatments that use a "series of incremental position adjustment appliances" that reposition teeth "from their initial tooth arrangement to a final tooth arrangement." EX1005, 7:12-19; *see id.*, 14:41-51. While Chishti-876 teaches that various types of tooth movement are appropriate with such aligners, Chishti-876 expressly teaches away from including round-tripping in path scheduling algorithms. Chishti-876 calls out round-tripping as especially undesirable and even harmful: "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**." EX1005, 14:46-51. Thus, as the Board correctly noted, Chishti-876 not only teaches to avoid round-tripping, it both describes it as highly undesirable and teaches that it can harm the patient.

There is no question that Petitioner was aware of the Board's findings in this

regard, since ClearCorrect was also the petitioner in the ’444 patent’s IPR. Yet Petitioner never once mentions the Board’s finding regarding Chishti-876, nor does it dispute that Chishti-876 teaches away from its proposed modification. *See infra* §IV.B (discussing petition arguments). This failure to address the Board’s prior findings is especially peculiar given Petitioner’s reliance on Chishti-876 for the incorporation of “movement patterns” (*e.g.*, Pet., 30, 35-37), despite Chishti-876 expressly teaching that round-tripping is inconsistent with its movement patterns. *See* EX1005, 14:41-51.

Evidence of prior art teaching away here is undisputed, not a factual issue to be resolved during trial. Nor is Petitioner’s failure to address this evidence curable during trial—it must be addressed in the petition. Accordingly, Petitioner’s failure to address known prior art evidence of teaching away from what they now propose is both inexcusable and incurable—this alone provides adequate basis to deny the petition.

B. Chishti-876’s Disparagement of Round-Tripping Undermines the Obviousness Challenge

Petitioner’s sole ground of unpatentability fails to address, much less rebut, the Board’s prior finding that Chishti-876 teaches away from the round-tripping step recited in each independent claim. Petitioner’s failure to address Chishti-876’s disparagement of round-tripping despite being on notice from the Board itself of those obviousness-destroying teachings is inexcusable and undermines the

petition's case.

When an obviousness ground proposes a combination of prior art teachings, the fact that a reference teaches away from a given modification is well established to be strong evidence of nonobviousness. *See Adams*, 383 U.S. at 52; *Santarus, Inc. v. Par Pharm., Inc.*, 694 F.3d 1344, 1364 (Fed. Cir. 2012) (describing a "classical example of 'teaching away'": "Proceeding contrary to the accepted scientific knowledge is 'strong evidence of nonobviousness.'" (quoting *Ricoh Co., Ltd. v. Quanta Computer Inc.*, 550 F.3d 1325, 1332 (Fed. Cir. 2008) and *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1552 (Fed. Cir. 1983))). As explained above in §IV.A, where a reference would discourage a POSITA from following a potential path, that reference teaches away. *See Gurley*, 27 F.3d at 553. Thus, a teaching away can entirely preclude a finding of obviousness. *See Mouttet*, 686 F.3d at 1333.

As explained above in detail in §IV.A, Chishti-876 teaches away from round-tripping, calling it especially undesirable and even harmful to patients. *See* EX1005, 14:46-51. There is no question that harming patients would be contrary to the purpose of orthodontic treatment. Chishti-876 thus expressly discourages POSITAs from pursuing the inclusion of round-tripping steps in treatment planning software. This teaching away was recognized by the Board in the IPR of the '444 patent. EX1008, 14 ("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.”). The Board concluded that, notwithstanding the recognition of the general concept of round-tripping in certain orthodontic modalities, based on the combined teachings of Chishti-511 and Chishti-876, a POSITA would not have found it obvious to use round-tripping as recited in the ’444 patent—i.e., the same step recited in the instant claims. *See id.*, 14-16.

Faced with these findings by the Board in its own prior case regarding the same claim element recited here, Petitioner remains silent. It does not dispute the Board’s findings that Chishti-876 taught away from round-tripping in treatment planning software like that disclosed in the Chishti patents. Indeed, it does not even mention this finding. Instead, the only mention of teaching away made by Petitioner is to argue that Chishti-511 does not teach away from round-tripping. *See* Pet., 29. This is woefully deficient in that it ignores Chishti-876 and mischaracterizes the record.

To be clear, what Chishti-511 says is that “teeth are moved in the quickest fashion with the least amount of round-tripping to bring the teeth from their initial positions to their desired final positions.” EX1004, 4:9-12. Thus, far from endorsing round-tripping, Chishti-511 says it should be minimized. And while Chishti-511 states that round-tripping is preferentially avoided but “sometimes

necessary," Chishti-511's definition of round-tripping in this passage is entirely different from that of the '217 patent. Specifically, Chishti-511 defines round-tripping as "any motion of a tooth in any direction other than directly toward the desired final position." EX1004, 4:13-16. In other words, Chishti-511 is saying that whenever possible, teeth should move in a straight line, and small deviations from perfect straight-line motion are possible if necessary, but they must be minimized. As the Board confirmed in the IPR of the '444 patent, this a distinct concept from the much more complex round-tripping movement recited in the claims of the '444 and '217 patents. EX1008, 15-16 ("[T]he 'round tripping' described in Chishti '511 is something different than the 'round tripping' required by the '444 patent.").

Furthermore, even considering Chishti-511's teaching in the context of the motivations of a POSITA still does not save the day for Petitioner. Chishti-511 teaches minimizing deviations from straight line movements, and Chishti-876 disparages round-tripping specifically as "highly undesirable," potentially harmful to a patient, and something to be avoided in movement patterns. In other words, the prior art still undisputedly teaches away from what is claimed. It would be error to consider Chishti-511's teachings in isolation while ignoring the teachings of Chishti-876. "It is impermissible … to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of

ordinary skill in the art." *In re Wesslau*, 353 F.2d 238, 241 (C.C.P.A. 1965); *see also, e.g.*, *Google LLC et al v. AGIS Software Development LLC*, IPR2018-01087, Paper 14 at 23 (Jan. 9, 2019) ("When evaluating claims for obviousness, it is well settled that 'the prior art as a whole must be considered.'" (quoting *In re Hedges*, 783 F.2d 1038, 1041 (Fed. Cir. 1986))). Petitioner's failure to do so exposes its combination as driven by hindsight, not by following the teachings of the prior art.

Moreover, reading the Chishti patents together undermines motivation to reach what is now claimed. In Chishti's earlier patent (Chishti-511, filed Oct. 8, 1998), he taught that deviations from straight line movements should be minimized, and in his later patent (Chishti-876, Aug. 29, 2001), Chishti expounded that round-tripping must be avoided in aligner treatment, as it risks harming patients. Certainly a POSITA reading these two references together would not be motivated to troll through the prior art seeking out new types of complex round-tripping movements (like those taught in the '217 patent) to incorporate into aligner treatment planning software. Thus, the relevant prior art when read together undermines motivation to include round-tripping as claimed. Petitioner only arrives at its combination by (1) ignoring the scope and content of the prior art—including its own cited references; and (2) following "the blueprint drawn by the inventor," which constitutes impermissible hindsight. *Orexo AB v. Actavis Elizabeth LLC*, 903 F.3d 1265, 1271 (Fed. Cir. 2018) (quoting *Interconnect*

Planning Corp. v. Feil, 774 F.2d 1132, 1138 (Fed. Cir. 1985)). Worse, it is impermissible hindsight with a deliberately blind eye to its own cited prior art.

Petitioner also asserts that Chishti-511 provides "fundamentally the same as the teaching of the '217 patent." Pet., 29. Petitioner willfully misreads both Chishti-511 and the '217 patent and ignores its own admission regarding claim terms. *Supra* §III. Not only does Petitioner's argument on page 29 overlook that Chishti-511 uses the term "round-tripping" to refer to an entirely different concept from the '217 patent, Petitioner also imposes an unduly narrow reading on the '217 patent. The portion of the '217 patent cited by Petitioner describes slowing, staggering, and round-tripping as options that may be evaluated separately or together, and during the process of generating a modified a treatment plan, these options can be "suitably applied alone or in combination, and **in any order**." EX1001, 13:11-13. Fig. 2B corroborates that there is no required order of preference, listing round-tripping as the second of three nonexclusive options to be applied.

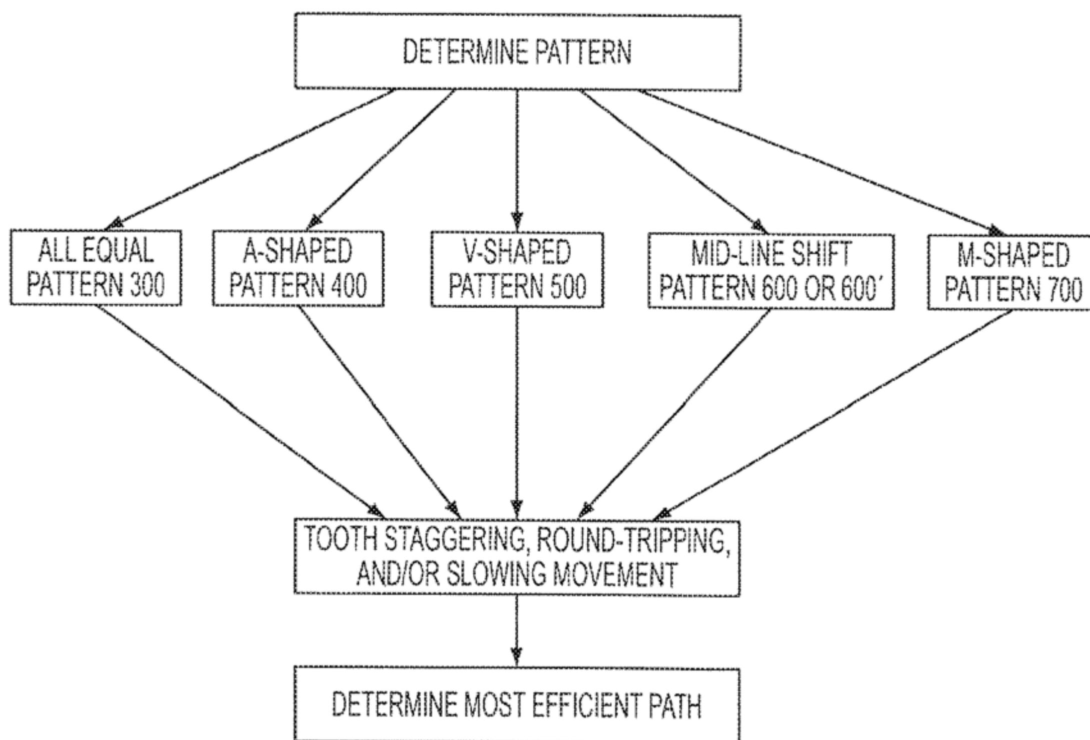

FIG. 2B

EX1001, Fig. 2B. Thus, while Petitioner quotes a single "exemplary embodiment" in which round-tripping is the third option applied, this in no way reflects the teachings of the '217 patent as a whole. Indeed, round-tripping is discussed as a desirable option throughout the '217 patent: appearing in the abstract, the summary, and throughout the detailed description, including in the figures. *See, e.g.* EX1001, Abstract, 2:10-22, 3:1-4 ("FIG. 9 is a diagram of the exemplary embodiment of FIG. 4 utilizing a round-tripping technique to avoid collisions with and/or obstructions between teeth during the orthodontic treatment."), 12:63-13:21, 13:51-61, 14:15-26, 15:24-39, Fig. 9. In no way is this comparable to Chishti-511,

which refers to round-tripping in a single passage to say paths should have the least round-tripping possible, and even then uses the term to refer to a different category of movement. And this is to say nothing of Petitioner's failure to even address Chishti-876's teaching that round-tripping is detrimental to patients and should be avoided.

In sum, since Petitioner fails to rebut the Board's finding that Chishti-876 teaches away from the claimed invention, or even to address Chishti-876's teachings in this regard, Petitioner fails to meet its burden in its sole ground of unpatentability to show that a POSITA would have been motivated to combine the four applied references with a reasonable expectation of success.

C. Petitioner Fails to Show a POSITA Would Have Been Motivated to Modify the Chishti Patents to Incorporate Becker

As discussed above, Petitioner's failure to adequately address the scope and content of the prior art, including known evidence of prior art teaching away, illustrates both a failure to meet their burden and the existence of unaddressed evidence that undermines motivation to arrive at what is claimed. In addition, the pivot to the Becker reference only presents additional problems. The petition fails to grapple with the fact that Becker is a different orthodontic treatment modality compared to the Chishti references or adequately establish logical reason to combine the different components of these different references to achieve what is claimed.

First, Petitioner fails to adequately explain why a POSITA would have looked to Becker for the proposed modification. Unlike Chishti-511, Chishti-876, and Sachdeva, Becker does not involve orthodontic aligners, software, or treatment planning. Instead, Becker relates to complex orthodontic procedures using braces and numerous brackets, wires, and rubber bands, with the wire-and-bracket systems being attached directly and permanently to the teeth. *See* EX1006, Fig. 8.6(g)-(l). Unlike treatment with aligners, Becker's treatment modality does not involve pre-staging a series of tooth positions from which a sequence of appliances can be manufactured. Instead, Becker involves traditional orthodontic practice: manual, by-eye adjustment of its archwires, elastic thread, and palatal wires by a treating orthodontist in repeated office visits. Becker thus says nothing about treatment planning software for staging movement, nor does it suggest that using aligners for its treatments would be appropriate or even possible. *See generally* EX1006.

Indeed, even Petitioner does not seriously suggest that the type of treatment taught by Becker (a complex transposition of teeth) would have been viewed as achievable with aligner treatment prior to the '217 patent's priority date. Instead, Petitioner characterizes Becker's treatment as merely "one example," but suggests that rather than following that example, a POSITA would have imagined "different ways to implement the concept of round-tripping." Pet., 24. For example,

Petitioner posits that "if only minor tooth movement is required to avoid colliding with a second tooth, aligners alone may be used." *Id.* Petitioner does not suggest that Becker teaches any such "minor tooth movement"; indeed, Becker is clearly directed to major tooth movements different in kind from the aligner treatment toward which Chishti patents' software is geared.

To summarize Petitioner's argument here, Petitioner does not contend that a POSITA would have viewed Becker's *actual* type of tooth movement as applicable to aligners. Nor does Petitioner point to any teaching in Becker regarding aligner treatment or corresponding treatment planning software. Instead, Petitioner suggests that a POSITA would have sought out Becker, seen that it disclosed a type of tooth movement described elsewhere in the prior art as inapplicable to aligner treatment, but then would have dreamed up an entirely different category of tooth movement that might be possible with aligners. And of course, the POSITA would have done so despite the relevant prior art's teaching that movements deviating from straight-line paths (to say nothing of the more complex round-tripping recited in the claims) should be avoided in aligner treatments because they would harm the patient. This type of blatant hindsight reasoning should be rejected.

Petitioner also suggests that a POSITA would have viewed Becker as applicable because Chishti-511 and other references (EX1016, EX1018, and

EX1019) teach that aligners can function with attachments. Pet., 25-26. To begin with, the "attachments" discussed by these references (changing the aligner's structure by "addition or removal of material," the addition of "buttons" to the aligner surface, or the use of simple elastics to increase forces for straight-line movement) are entirely different from the type of treatment used in Becker, which uses traditional treatment with crisscrossing wires, palatal engagement devices, and the like. *See, e.g.*, EX1004, 10:1-6; EX1016, Fig. 2-24c (button on aligner to increase straight-line force already provided by ordinary aligner treatment); EX1018, Abstract, Fig. 7 (window cut to add button to aligner surface with similar functionality); EX1019, Abstract, 3:21-48 (using simple "bump, bead, wedge," or similar constructs to engage aligner), Fig. 7 (showing button on tooth providing aligner engagement). None of the attachments Petitioner points to are disclosed to provide movements of the type Becker performs, much less to perform such movements safely using an aligner. And Petitioner does not suggest that the actual configurations used by Becker would be compatible with aligner treatment. Indeed, Petitioner does not even suggest that Becker's example of wire-and-bracket treatment would function in aligner treatment. Petitioner merely states that "depending on the type of malocclusion, aligners **<u>may</u>** be used," possibly with attachments, to provide a "**<u>type</u>** of round-tripping" in a broad category that also includes Becker's type of tooth movement. Pet., 26. Becker itself doesn't say

anything about aligners, it discusses a rare instance a doctor may encounter that can be addressed surgically or with complex wire-and-bracket systems. *See* EX1006, 7-9.

Petitioner's conclusory dismissal of round-tripping's disadvantages fails to meaningfully address, let alone cure, the art's teaching away from using round-tripping. Petitioner briefly and generically concedes round-tripping "can have disadvantages," but it points to no teaching that round-tripping *as taught by the '217 patent* was acceptable (let alone desirable) in aligner treatment. *See* Pet., 26-27. Petitioner cites to a study (EX1022, "Alexander") suggesting round-tripping's harm could be "anecdotal" (Pet., 27 n.8), though it assessed concerns with traditional archwire treatment, not aligner treatment. *See* EX1022, 1 ("continuous arch wire mechanics"). Moreover, Alexander was directed to tooth movement that was "inadvertently" produced during ordinary, straight-line treatment with braces, such as "jiggling" of a tooth. EX1022, 1, 3. In other words, Alexander indicated that small, inadvertent out-of-path movements might not be harmful (although the archwire treatment group saw a "significant difference in resorption severity" for "maxillary central and lateral incisors"), not that the more complex, purposeful movements of the type recited in the claims of the '217 patent could be performed safely. Indeed, Alexander never speaks to intentional round-tripping of any kind.

Similarly, Chishti-511's discussion of its style of "round-tripping" indicates

that movement in a straight line from start to finish is preferred, and incidental tooth movement outside of that path is still undesirable but permissible so long as it is minimal. *See* EX1004, 4:9-16. Nowhere does Petitioner identify any prior art rebutting Chishti-876's teaching that aligner treatment should avoid intentionally round-tripping due to risk of harm to the patient.

Indeed, Petitioner engages in mental gymnastics to avoid even addressing Chishti-876's teaching away from round-tripping in the context of Becker. Rather than address whether a POSITA would have been motivated to combine the teachings of the prior art based on the collective teachings of all four cited references, Petitioner addresses each in piecemeal fashion. Petitioner, for example, addresses whether Chishti-511 is compatible with individual references—all while avoiding the disadvantages reported in Chishti-876. First the petition discusses the combination of Chishti-511 and Sachdeva (purporting to add collision avoidance despite Chishti-511 already discussing the subject). Pet., 20-23. Then the petition discusses combining Chishti-511 and Becker, without discussing Sachdeva (beyond asserting that the type of reasons a POSITA would have looked to Becker resemble the type of reasons a POSITA would have looked to Sachdeva). Pet., 23-29. Then, the petition asserts a POSITA would have been motivated to combine Chishti-511 to incorporate the "movement patterns" of Chishti-876, with no mention of either Sachdeva or Becker, and especially without discussion of

Chishti-876's teachings to avoid round-tripping in such movement patterns. Pet., 30-31. Nowhere does Petitioner discuss motivation to combine the teachings of all four references (or the prior art) as a whole.

In a single conclusory sentence, Petitioner asserts certain "features" from each reference would not have interfered with each other. Pet. 32. But Petitioner does not address how the teachings of those references impact its obviousness rationale. In any event, obviousness is not about physical combinability. A combination is not obvious where a POSITA could have combined the references; rather, obviousness requires a reason why a POSITA would have combined all necessary teachings together simultaneously. As the Federal Circuit has repeatedly admonished, it is not sufficient to assert that "one of ordinary skill in the art *could* combine" references in a particular way; rather one must show that "they *would* have been motivated to do so." *InTouch Techs., Inc. v. VGo Communs., Inc.*, 751 F.3d 1327, 1352 (Fed. Cir. 2014) (emphases original); *see, e.g.*, *Polaris Indus. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1068 (Fed. Cir. 2018) (vacating decision where "the Board focused on what a skilled artisan would have been *able* to do, rather than what a skilled artisan would have been *motivated* to do at the time of the invention" (emphases original)). By failing to address motivation to arrive at the combination as a whole, Petitioner thus advances an argument "fraught with hindsight," turning a blind eye to the incompatibility of Becker with Chishti-876 to

produce a four-reference combination drawn on the blueprints of the claims rather than the reasoning of a POSITA. *ActiveVideo Networks, Inc. v. Verizon Communs., Inc.*, 694 F.3d 1312, 1327 (Fed. Cir. 2012).

For at least the foregoing reasons, Petitioner fails to meet its burden of demonstrating that claims 1-20 were obvious over Chishti-511, Chishti-876, Sachdeva, and Becker.

V. CONCLUSION

Accordingly, for at least the reasons set forth above, institution of *inter partes* review should be ***denied***.

Respectfully submitted,

Date: August 8, 2025

/ Michael T. Rosato /
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CERTIFICATE OF COMPLIANCE

Pursuant to § 42.24(d), the undersigned certifies that this paper contains no more than 14,000 words, not including the portions of the paper exempted by § 42.24(b). According to the word-processing system used to prepare this paper, the paper contains 5,992 words.

Respectfully submitted,

Date: August 8, 2025

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CERTIFICATE OF SERVICE

I certify that the foregoing Patent Owner's Preliminary Response Pursuant to 37 C.F.R. § 42.107 was served on this 8th day of August, 2025, on Petitioner at the following electronic service addresses:

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