

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. IPR2025-00816
U.S. Patent No. 11,369,456

PETITIONER'S REPLY

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1023	Vincent DeAngelis, <i>The Amalgamated Technique, a Mechanically and Biologically Efficient Method for Controlled Tooth Movement</i> , Angle Orthodontist, Vol. 50, No. 1, pp. 1-15 (Jan. 1980)
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I. GROUND 1

A. Chishti-511 Discloses Identifying and Avoiding Collisions

Align’s argument regarding Chishti-511 relies on a flawed premise: that Chishti-511’s “path determination process” and “aligner calculation process” are “two separate processes” (POR, 17), such that Chishti-511 never identifies or responds to collisions after those paths are defined. Align’s interpretation, however, is divorced from Chishti-511’s teachings. Chishti-511 clearly shows that the “path determination process” and “aligner calculation process” are part of an integrated, iterative loop (Figs. 1 and 6) such that the aligner calculation process can transfer control back to the path definition process if any collisions are detected when the system simulates—during the “aligner calculation process”—actual tooth movement. Ex-1004, 8:54-58.

Chishti-511’s system first defines idealized, collision-free tooth paths where teeth are moved “in the quickest fashion.” Ex-1004, 3:40-4:22; Fig. 1 (steps 140, 150). Chishti-511 then—during the “aligner calculation process”—uses finite element analysis to simulate how it expects a patient’s teeth to actually move if they were to use the calculated aligners. Ex-1004, 5:7-6:37, Figs. 2-4, 6:2-15, 6:23-32.

Importantly, Chishti-511 recognizes that simulation may show that teeth will deviate from their ideal path/movements, such as moving “too slow,” “too far short

of the desired end position,” “too far past the desired end position,” or “in a direction other than the desired direction.” Ex-1004, 7:37-51; Ex-1040, ¶¶10-11. A POSITA would understand that deviations from idealized movements may lead to collisions. Ex-1040, ¶11. This is consistent with real world applications, as teeth often move differently than an initial idealized plan. *Id.* While Chishti-511’s system attempts to correct for these deviations by adjusting the aligners, Chishti-511 recognizes that there are limits to these adjustments. Ex-1004, 7:37-51; Ex-1040, ¶12. A POSITA would understand that any of these deviations from idealized movements may result in collisions. Ex-1040, ¶12. Similarly, if aligners are unacceptable, the process can “relax” constraints, such as “a maximum rate of displacement of a tooth, a maximum force on a tooth, and a desired end position of a tooth.” Ex-1004, 2:30-33, 8:32-39. Changing these parameters likewise can result in different movements than the idealized movement, resulting in collisions. Ex-1040, ¶12.

If the aligners are still unacceptable (such as if teeth will collide during treatment), the system “transfers control to a path definition process (such as step 150, FIG. 1) to redefine those parts of the treatment path having unacceptable aligners (step 630).” Ex-1004, 8:42-59, Fig. 6; Ex-1040, ¶12. This step can include “changing the increments of tooth motion,” “changing the path followed by one or more teeth in the treatment path,” “or both.” Ex-1004, 8:53-61; Fig. 6. Thus,

Chishti-511 both identifies and avoids collisions when identifying the unacceptability of an aligner. Pet. 36-40.

Align argues that, because Chishti-511's path recalculation in the aligner calculation process uses the term "unacceptable" aligners, it does not relate to determining collisions. But the entire point of Chishti-511's solution is to create a "clinically viable sequence of tooth positions" that "do[] not result in a collision of teeth." Ex-1004, 4:7-22. Chishti-511 further states that new proposed aligners will be calculated if the system determines that teeth motion is not "orthodontically acceptable" or if "an acceptable end position is not reached by the teeth." Ex-1004, 5:25-32. Align attempts to divorce "orthodontically acceptable" from collision avoidance (POR, 30-31), but these concepts are inseparable. An orthodontic treatment plan that produces collisions between teeth is, by definition, not orthodontically acceptable. Ex-1003, ¶106. Chishti-511 uses functional language—"orthodontically acceptable," "acceptable end position," "clinically viable"—precisely because these terms encompass all the reasons a treatment outcome might fail, including collisions. Accordingly, a POSITA would not understand Chishti-511's system to check whether an aligner applies too much force but ignore whether the resulting movement causes teeth to crash into one another.

Moreover, Align fails to even acknowledge that Chishti-511's idealized paths are created before movement is simulated, and that the simulated movement

can reveal unplanned movement (even in different directions than expected) and further relaxed constraints, any of which a POSITA would have understood may result in collisions. Ex-1004, 2:30-33, 7:37-51, 8:32-39, Fig. 6, 2:30-33; Ex-1040, ¶¶11-12.

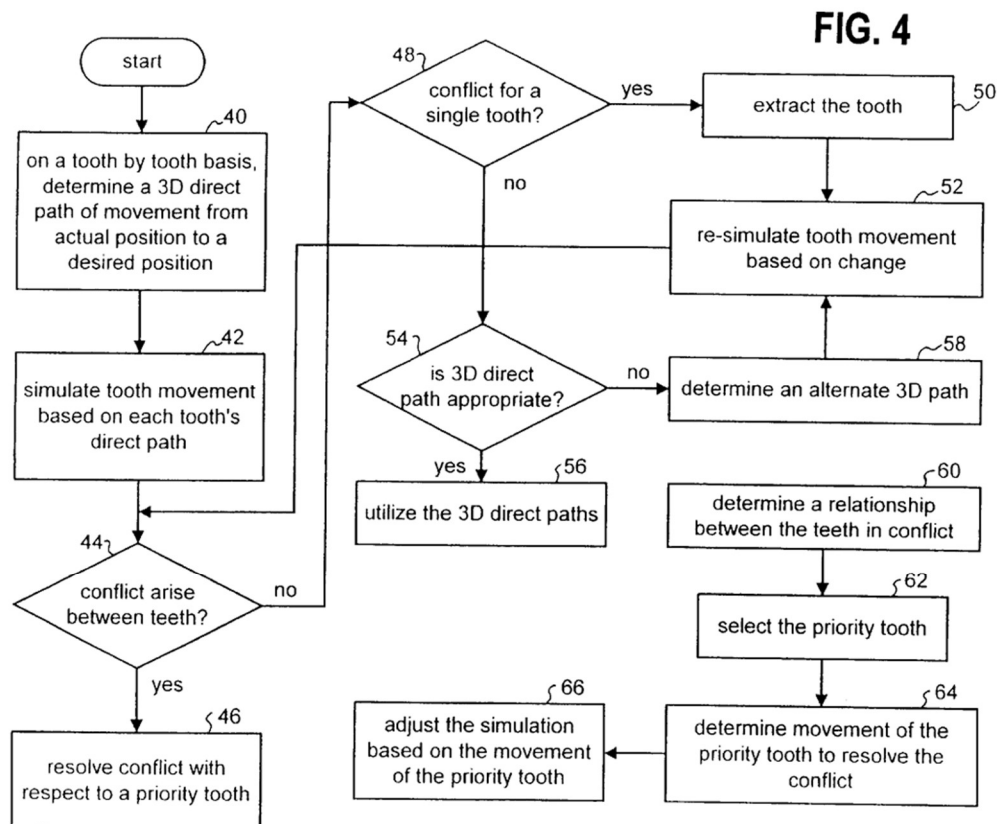
Finally, Align’s argument would render redundant portions of Chishti-511. For example, Align provides no explanation for Chishti-511 redefining tooth paths if the initial tooth path was sufficient to guarantee a collision-free treatment plan. Yet Chishti-511 shows that path definition and aligner calculation are not sequential, independent silos, but rather are interrelated stages within a closed-loop system. Ex-1004, Figs. 1-2, 6; 4:25-32; 8:42-66. Align’s reading would mean that Chishti-511 designed a sophisticated iterative loop that checks for every type of problem except the most fundamental one (tooth collisions)—an implausible reading of a patent designed to automate treatment planning.

B. Sachdeva Renders Obvious Identification of Collisions

Align also argues against the combination of Chishti-511 with Sachdeva. POR, 35-52. Specifically, Align argues that Sachdeva identifies only “conflicts,” not “collisions,” and that its disclosure involves only a “stationary” tooth. Align is trying to manufacture a distinction without a meaningful difference. Sachdeva and the ’456 patent use slightly different terminology (“conflicts” vs. “collisions”) to describe the same practical problem: tooth movement paths interfering such that

sequencing or modification is required. Moreover, Sachdeva simulates the movement of both teeth along their respective direct paths before identifying the conflict—the nonpriority tooth is “stationary” only after the system resolves the conflict by delaying it. Ex-1007, 5:3-26, Fig. 4.

Sachdeva discloses an orthodontic treatment-planning system that creates paths of movement for each tooth (40), simulates tooth movement based on the created paths (42), determines if a conflict (collision) arises between teeth (44), and if so, resolves the conflict (46).



Ex-1007, Fig. 4; *see also id.*, 4:50-5:26.

Sachdeva explains that a conflict occurs between two teeth when “one tooth interferes with the direct path movement of another tooth causing a particular tooth to not be able to obtain its desired position.” *Id.*, 5:5-8. In other words, the other tooth *would* move to its desired position, but it cannot because it would collide with another tooth. *Id.*; *see also* Ex-1003, ¶¶113-114. Sachdeva avoids this collision by moving a priority tooth first, while movement of the non-priority tooth is delayed until a later stage. Ex-1007, 5:9-25; Ex-1003, ¶114.

As outlined in the Petition, a POSITA would have been motivated to integrate Sachdeva’s collision identification into Chishti-511’s system so that detection of a collision would trigger an aligner recalculation and to further integrate Sachdeva’s collision avoidance technique into Chishti-511’s path redefinition process. Pet., 19-22, 37-42.

1. Sachdeva Discloses Identifying Collisions

Align argues that Sachdeva does not identify collisions because it uses the word “conflict” instead of collision. POR, 37. Align further argues that Sachdeva’s conflict is somehow different because one of the teeth involved “cannot move because another tooth blocks its path” and is purportedly “stationary.” *Id.* Align’s arguments are meritless.

First, Align admits that Sachdeva identifies a conflict for a tooth because “another tooth blocks *its path*.” *Id.* (emphasis added). This is consistent with

Sachdeva, which states that “the movement of one tooth interferes with the direct path movement of another tooth,” preventing it from “obtain[ing] its desired position.” Ex-1007, 5:5-8. Thus, Sachdeva contemplates that the tooth has a *movement path* towards a *desired position* and is not merely a stationary tooth. See Pet. 38, 43.

Second, Align ignores that Sachdeva identifies the collision by “simulat[ing] tooth *movement* based on *each tooth’s direct path*.” *Id.*, Fig. 4 (emphasis added). Thus, Sachdeva’s collision identification results from a *simulation* of both teeth attempting to move along their respective paths. Align focuses on the subsequent *modification* (delaying the non-priority tooth) to argue that the tooth is stationary, but Sachdeva delays the tooth only because the simulation indicates that a collision would otherwise occur.

Third, Align’s argument is inconsistent with the ’456 patent’s own claims. Claim 8 of the ’456 patent states that a collision is identified, and as a result, “*initial* movement” of a first dental object is “delayed.” Ex-1001, Claim 8 (emphasis added). Thus, claim 8 recites not moving a tooth *initially* to avoid a collision, which is precisely the same collision avoidance technique Sachdeva discloses. Align does not even address this glaring inconsistency.

Fourth, contemporaneous references confirm that Sachdeva uses the term “conflict” to describe collisions. U.S. Patent No. 6,632,089 (“the ’089 patent”), a

patent that includes Sachdeva's inventors and incorporates Sachdeva by reference, describes Sachdeva's disclosure as relating to "collision" detection and "conflict" resolution:

... it is possible to detect the collision between teeth or between teeth The point cloud representing tooth objects defines a surface, *when surfaces come in contact during the tooth movement a collision is simulated*. This collision is detected by suitable *collision detection algorithms*. *When the collisions are detected, the user can be notified of the collision and resolve the conflict between teeth*, for example by selecting one tooth as a primary tooth and moving that tooth first in an initial stage of treatment, and then moving the other tooth in a secondary stage of treatment. These features are described in further detail in U.S. Pat. No. 6,250,918 [Sachdeva] to Sachdeva et al., the contents of which are incorporated by reference herein.

Ex-1043, 30:1-16 (emphasis added). This further confirms that Sachdeva's reference to "conflict" is indicative of a collision.

Align also cannot reasonably dispute that the type of intra-arch conflict identified by Sachdeva constitutes a collision, as Align's own patents refer to this same type of occurrence as a collision. U.S. Patent No. 6,406,292, assigned to Align, describes using a "collision detection process to highlight the contacting points of the teeth" when visualizing "the meshing of the upper and lower arches together," akin to Sachdeva's disclosure of detecting an inter-arch

conflict/collision. Ex-1044, 5:40-45, Ex-1007, 5:19-25. Neither Align nor its expert disputes that this type of collision is applicable to clear aligners.

2. Dr. Yadav's Testimony Does Not Support Align

Align relies on portions of Dr. Yadav's deposition testimony to support its narrow view of collisions, but this reliance is misplaced and does not support its position.

First, Align's characterization of Dr. Yadav's testimony is irrelevant because it rests on the mistaken premise that Sachdeva discloses movement of only one tooth. As discussed above, that is incorrect.

Second, Align cites a portion of the deposition testimony where Dr. Yadav agrees that a "tooth collision" can occur when "[o]ne moving tooth strikes against another." Ex-2015, 47:20-48:6. But that testimony was responsive to a question by Align's counsel giving an example of one type of collision (one moving tooth striking against another), and does not limit collisions to scenarios involving only two moving teeth. Indeed, a moving tooth striking a stationary tooth is still a collision—just as a car can collide with a parked vehicle.

Third, Align cites a portion of the deposition testimony as an alleged admission that stationary teeth cannot collide. POR, 37 (citing Ex-2015, 54:5-16). But again, Align mischaracterizes Dr. Yadav's testimony. The context of his testimony makes clear that he is explaining that collisions do not occur when tooth

movement is not planned or undertaken. Ex-2015, 54:6-7, 54:9-11. That scenario is plainly inapplicable to Sachdeva, which involves planned tooth movement.

Finally, Align relies on Dr. Yadav's testimony describing Sachdeva's example of a lower tooth blocking movement of an upper tooth as a "conflict." POR, 37 (citing Ex-2015, 79:10-17). But that testimony simply adopts Sachdeva's terminology and does not support Align's assertion that Sachdeva's "conflict" is not a "collision."

3. Sachdeva Renders Obvious Modifying the Schedule of Movement in Response to An Identified Conflict/Collision

Align argues that even if Chishti-511 and Sachdeva were combined, the combination does not modify "in response to the identification of a collision" because Sachdeva's scenario purportedly describes a "collision-free movement" where one tooth cannot move because another blocks its path. POR, 37-38. But this argument fails because, as explained above, the reason Sachdeva delays the non-priority tooth (what Align terms "no movement") is because Sachdeva's system has identified that simultaneous movement of the teeth would cause a collision. Indeed, Sachdeva avoids the collision by selecting a priority tooth and sequencing movement accordingly, which is a modification made to avoid the identified conflict/collision.

Align also argues that even if Sachdeva were combined with Chishti-511, the combination would not involve Sachdeva's collision avoidance because collisions are allegedly not identified or resolved after Chishti-511's initial path definition stage. POR, 39-40. But this argument ignores that Chishti-511's aligner calculation stage analyzes simulated tooth movement that can cause collisions, just as disclosed in the '456 patent. *See* Section I.A; Ex-1004, 7:37-51, 8:32-39, 2:30-33, Fig. 6; Ex-1040, ¶¶10-11. Sachdeva likewise describes simulating tooth movement, and identifying whether a collision occurs due to that simulation. Ex-1004, Fig. 4. As described in the Petition, it would have been obvious for Chishti-511's system to identify if any collisions occurred during the aligner calculation process (also after simulating movement) to determine if modifications are necessary, just as Sachdeva does. Pet., 21-22, 36-42.

C. Align's Arguments for Limitations 1(F) and 1(G) Fail

Align argues that ClearCorrect failed to establish the obviousness of limitations 1(f) and 1(g) for the same reasons it allegedly failed for limitations 1(c) and 1(d)—namely, that Chishti-511's initial tooth paths are already “collision free.” POR, 40-42. Those arguments fail for the same reasons discussed above.

D. The Petition's Motivation for Combining Chishti-511 and Sachdeva is Well-Supported

Align argues that there is no motivation to combine Chishti-511 and Sachdeva, but it ignores the clear compatibility of the references' relevant teachings and a POSITA's motivation to combine them. *See* Pet. 19-22.

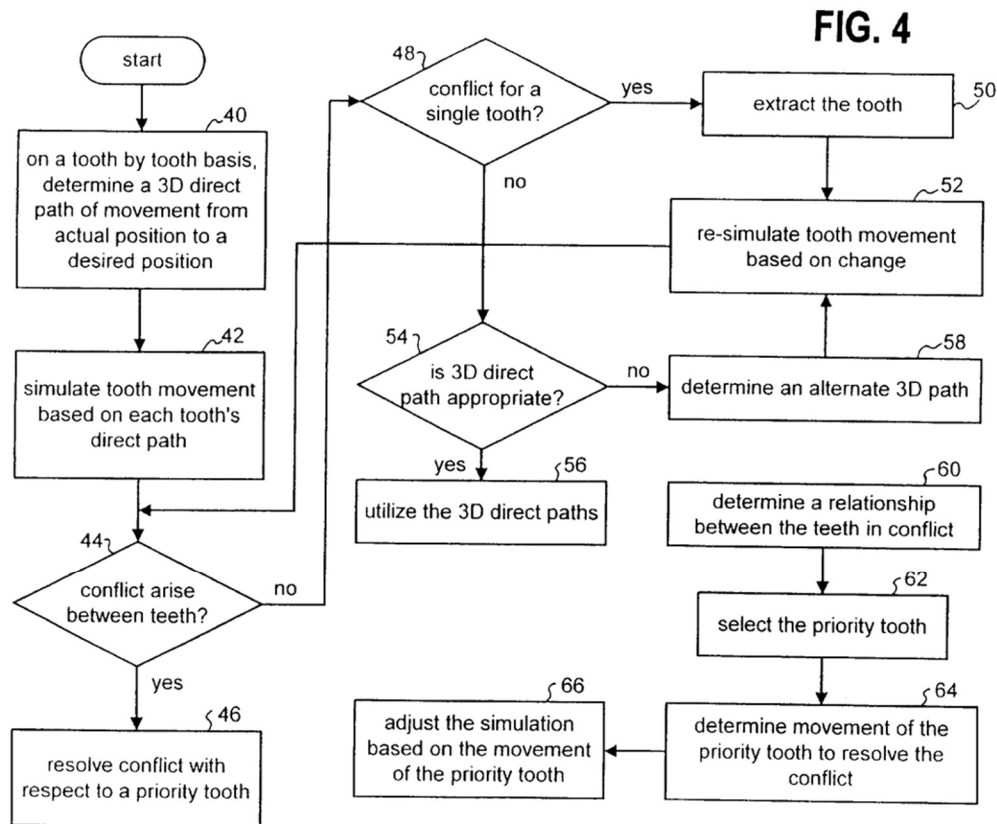
As discussed above, during Chishti-511's aligner calculation process (after simulating tooth movement), the system identifies "[a]ligners [that] may be unacceptable for a variety of reasons." Ex-1004, 8:42-43. In such cases, Chishti-511's system will recalculate the unacceptable aligners, starting by "redefin[ing] those parts of the treatment path having unacceptable aligners." *Id.*, 8:54-65.

The Petition argued it would have been obvious to use "Sachdeva's collision-identification process [as] an option for determining the acceptability of aligners (.e.g., triggering whether a new aligner should be calculated)." Pet., 21. Indeed, Chishti-511 already redefines tooth paths in the case of unacceptable aligners, and ClearCorrect argued it would have been obvious to trigger that process based on Sachdeva's collision-identification and "modify[] Chishti-511's 'path definition process'" to include Sachdeva's collision avoidance technique. Pet., 21-22.

Align argues that there is inconsistency in referring to the path definition process (step 150) and the aligner calculation process (POR, 44-46), but ignores

the relationship between these processes. In discussing Figure 6 (part of the aligner calculation process), Chishti-511 makes clear that in certain cases of unacceptable aligners, “the process transfers control to a path definition process (*such as step 150*, FIG. 1) to redefine those parts of the treatment path having unacceptable aligners.” Ex-1004, 8:42-58 (emphasis added); Fig. 6. Thus, in ClearCorrect’s proposed combination, if aligners are unacceptable due to collisions arising during simulated tooth movement, the process will transfer control to redefine treatment paths to avoid those collisions. There is no inconsistency here.

Align next argues that there are differences between Chishti-511 and Sachdeva, but it overlooks their similarities. As shown below, Sachdeva begins with a “path of movement” for each tooth, just as Chishti-511’s process starts with defined tooth paths. Ex-1007, Fig. 4 (40); Ex-1004, Fig. 1 (150).



Ex-1007, Fig. 4. Sachdeva then “simulates tooth movement,” just as Chishti-511 simulates actual tooth movement using finite element analysis. Ex-1007, Fig. 4 (42); Ex-1004. 5:7-6:37; Figs. 2-4.

After simulating tooth movement, Sachdeva then identifies collisions resulting from the simulation. Ex-1007, Fig. 4 (44), 5:3-8. And as discussed above, Chishti-511 acknowledges that there can be many unexpected tooth movements during its simulation—even teeth moving in a different direction than desired. Ex-1004, 7:37-51; Ex-1040, ¶12. Thus, it would have been obvious to identify collisions after simulation—just as Sachdeva teaches—especially since Chishti-

511 acknowledges that a tooth's actual movement (once simulated) can vary considerably from their idealized paths. Indeed, Chishti-511 itself acknowledges that aligners can be "unacceptable for a variety of reasons," and a POSITA would have been motivated to identify applicable reasons for unacceptability, including collisions, in view of Sachdeva. Ex-1004, 8:42-43; Ex-1040, ¶12.

Next, Align argues that a POSITA would not look to Sachdeva because it discusses braces, but the state of the art recognizes the applicability of these teachings. For example, the '089 patent, which incorporates Sachdeva by reference, explains that its treatment planning and simulation features apply to a wide range of treatment regimes, including brackets and wires as well as "removable, transparent aligning devices." Ex-1043, 27:9-18; *see also id.*, 10:5-17, 4:45-52, 1:36-44, 30:1-8. Likewise, Chishti-511 expressly recognizes the analogous nature of such teachings, stating that its disclosures apply to both conventional braces and polymeric shells, such as clear aligners. Ex-1004, 2:4-15, Abstract.

Align also contends that Sachdeva and Chishti-511 are somehow incompatible because the systems allegedly use different types of simulations. *See* POR, 51 (arguing "Sachdeva's simulation was generic type of simulation"). But ClearCorrect never argued that Sachdeva's simulation would be incorporated into Chishti-511's system. In any event, such a requirement would be legally erroneous.

Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC, 825 F.3d 1373, 1381 (Fed. Cir. 2016) (“The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.”).

Finally, Align criticizes the testimony of Dr. Clark as allegedly not supporting a motivation to combine, noting he lacks orthodontic experience. POR, 48. But ClearCorrect’s motivation to combine arguments are well supported by Dr. Yadav, who has significant orthodontic experience. Align also cannot fault ClearCorrect for relying on the testimony of a computer scientist, given that Align has argued that a POSITA for the related ’444 patent would be part of a team including such a member. Ex-1038, ¶114; Ex-1037, ¶19.

E. Align Presents No Independent Arguments for the Other Ground 1 Claims

Align advances no independent patentability arguments for any of the other independent or dependent claims challenged under Ground 1. Because Align’s only arguments (directed solely at claim 1) fail, the Board should maintain its initial preliminary findings and cancel claims 1-9, 11, and 13-17.

II. GROUND 2

A. The Prior Art Does Not Teach Away From Necessary Indirect Movement

Align argues a lack of motivation to apply Becker's indirect movement technique in view of Chishti-876's statements regarding round-tripping. POR, 54-55. But its argument fails to address that the art recognized disadvantages, but also recognized circumstances in which the technique was useful or necessary. Indeed Chishti-511 states "round-tripping is sometimes necessary," (Ex-1004, 4:14-15), and a POSITA therefore would have been motivated to look to the well-known technique of round-tripping as a tool for potential use. Indeed, Chishti-511 discloses as least as much in this regard as the '456 patent, which discloses using round-tripping only "as a last resort." Ex-1001, 13:14-18.

It is undisputed that round-tripping was well known in the art. Pet. 15-17. Align's only argument is based on a single statement from Chishti-876 that "'round tripping,' i.e., while avoiding moving a tooth along a distance greater than absolutely necessary ... is highly undesirable, and has potentially negative effects on the patient." POR, 55-56; Ex-1005, 14:46-51. But Align having made one disparaging statement in one of its own prior-art publications about a known technique does not forever inoculate future Align patents from challenges to claims reciting that known technique. As the Federal Circuit has explained, "[a] known or

obvious composition does not become patentable simply because it has been described as somewhat inferior.” *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994).

The Petition addressed head-on the disadvantages of round tripping, acknowledging that it should be avoided if possible. Pet. 16-17, 26-27.

Nevertheless, the prior art as a whole contains multiple other references—such as Chishti-511 and Becker—that *do* teach the use of round tripping, at least in certain limited circumstances, as the Petition explained. Pet. 12-17. For example, Chishti-511 (which shares a named inventor with Chishti-876) recognizes round tripping is “sometimes necessary to allow teeth to move past each other.” Ex-1004, 4:13-15. “When prior art contains apparently conflicting references, the Board must weigh each reference for its power to suggest solutions to an artisan of ordinary skill.” *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991).

The Petition further explained that a POSITA would have been motivated to include, in treatment-planning software, the option to perform round tripping, because for some patients it would be “the only option.” Pet. 22, 24-25. As Becker explains, its treatment (a form of round-tripping) is a “preferred line of treatment” in certain cases. Ex-1006, 5. The Petition addressed—as did Dr. Yadav (Ex-1003, ¶¶68-70, 81-84)—the understanding that a POSITA would avoid round-tripping if possible but that it may sometimes be necessary. Pet. 15-17, 22-24. This supports a finding of obviousness. *See Optivus Tech., Inc. v. Ion Beam Applications S.A.*, 469

F.3d 978, 989 (Fed. Cir. 2006) (declining to find teaching away from a combination including a process that “would kill patients rather than cure them” because a POSITA would “modify[] it to enable ... therapy”).

Align ignores these teachings of the prior art as a whole—including Chishti-511 and Becker—and instead argues, based solely on Chishti-876 (a reference not even relied on in the Petition for this feature), that a POSITA would not have been motivated to look to Becker’s teachings. POR, 54-55. Yet it stands to reason that a POSITA, starting with a reference that says round-tripping is “sometimes *necessary*” (Chishti-511), would look to references disclosing details about those necessary features. Ex-1004, 4:9-15 (emphasis added); Pet. 27-28. And Chishti-876’s indication that this type of movement should be avoided is entirely consistent with Chishti-511, which teaches using the “least amount of round-tripping”—a recognition that avoiding the technique may not always be possible. Ex-1004, Claim 9; Pet. 24-27. Align’s exclusive focus on one reference fails to consider the prior art as a whole and should be rejected. *Shockwave Med., Inc. v. Cardiovascular Sys., Inc.*, 142 F.4th 1371, 1384 (Fed. Cir. 2025).

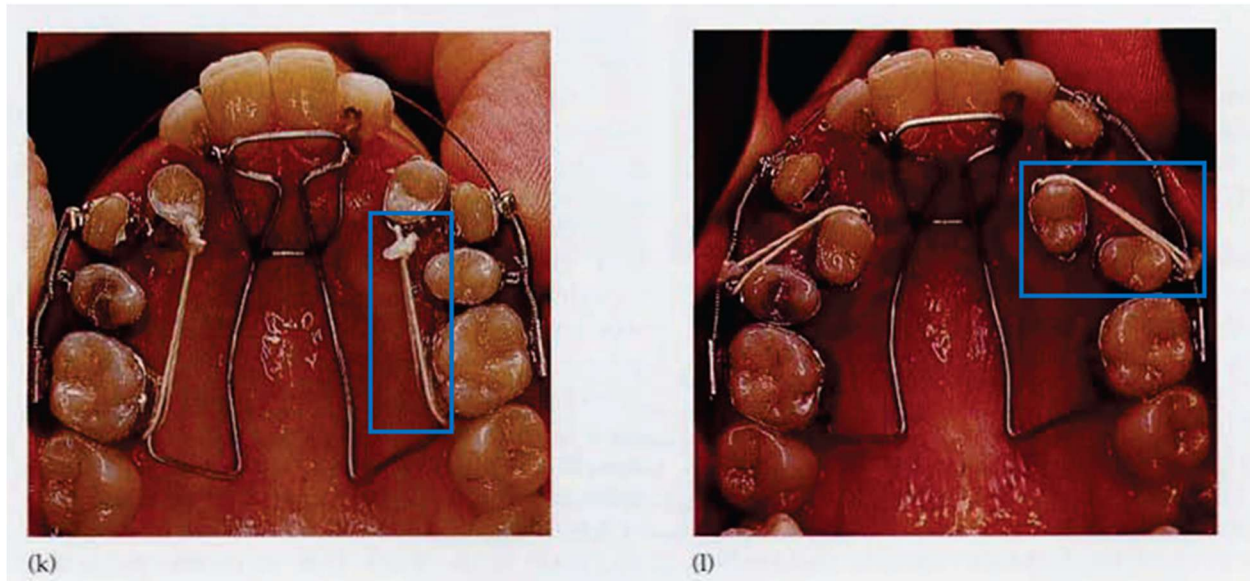
Finally, Align also argues that the Petition does not address Chishti-876’s purported teaching away. That is not correct. The Petition expressly recognizes that this type of movement “was understood to be avoided if possible.” Pet., 16-17; *see also id.*, 26-27. This is the *same teaching* described in Chishti-876. Align’s

argument essentially boils down to whether the discussion of the disadvantages included a citation to Chishti-876, which elevates form over substance.

B. Becker’s Teachings are Applicable to Clear Aligner Systems

Align fails to substantively address the Petition’s explanation about how the tooth movement disclosed in Becker can be accomplished with aligners. Align’s expert, rather than addressing *any* of the evidence or arguments in the Petition, merely states that “Dr. Yadav presents no evidence” that Becker’s technique could be accomplished with aligners. Ex-2013, ¶131. But this is demonstrably incorrect. The Petition explained in detail—supported by Dr. Yadav—how Becker’s teachings were known to be used with aligners. Pet. 23-24. Dr. Yadav explained that the same techniques used in Becker to effect tooth movement (e.g., attachments with elastics) had also been used in clear aligner systems. Ex-1003, ¶83. Notably, Align’s expert Dr. Valley does not opine that Becker’s movement is impossible with aligners—only that Becker’s example involved braces and was described as “rare.” Ex-2013, ¶131. The Patent Owner’s Response does not acknowledge, much less address, Dr. Yadav’s or the prior art’s evidence, and the Petition thus stands un rebutted on this issue.

The Petition explained that the prior art teaches using attachments and elastics, just as Becker does, to perform tooth movement. Becker describes one such example.



Ex-1006, 7 (annotated). Similarly, Tuncay illustrates using elastics with attachments when treating a patient using clear aligners.¹



FIG 2-23 (a to c) A tab is cut into the Essix appliance for attachment of an elastic band.

¹ Tuncay describes orthodontic treatment using a clear aligner it refers to as an “Essix appliance.”



FIG 2-24a The initial heated plier thermoforms a cylinder into the appliance.



FIG 2-24b The second heated plier crimps the base of the cylinder to form an elastic attachment.

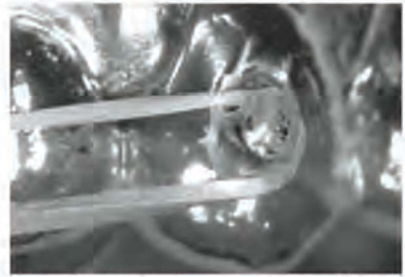
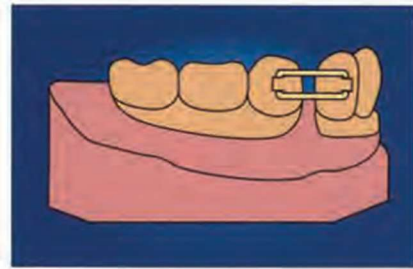
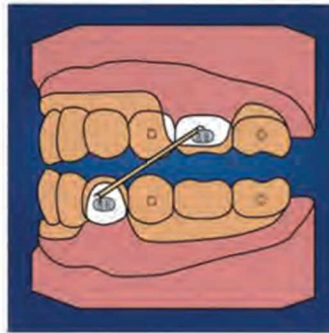


FIG 2-24c An elastic can be attached to the thermoformed button.

Ex-1016, 35.

FIG 2-27 (right) The bonded molar attachment is the base for the Class II elastic. The molar is encapsulated in the Essix appliance and is therefore resistant to displacement.

FIG 2-28 (far right) A stretched elastic between the sections of the Essix appliance creates the force necessary to close the buccal section space. A stretched elastic between the sections of an anterior Essix appliance induces enough force to close the midline diastema.



Id., 37; *see also id.* 33-38 (discussing using “elastics” and “elastic attachment tabs” with clear aligners). Other aligner-focused references similarly show that using attachments and elastics was well known. *See* Ex-1018, 11:45-65, 12:28-13:5, Fig. 9; Ex-1019, 3:21-48, 4:20-52, 10:14-29, Fig. 5. Moreover, as explained in the Petition, Chishti-511 already states that such attachments are compatible with its aligner system. *See* Pet., 23 (citing Ex-1004, 8:42-53, 10:1-6), 6:21-24. In view of this evidence, ClearCorrect’s expert Dr. Yadav testified that aligners with attachments could be used to achieve Becker’s technique. Pet., 24 (citing Ex-1003, ¶83).

The Board should reconsider the Institution Decision’s preliminary position finding a lack of evidence of how Becker’s technique could be accomplished with aligners. The record evidence (unrebutted by Align)—including Dr. Yadav’s testimony and the Petition’s explanation of the prior art—shows that a POSITA would have been motivated to use attachments and elastics to effect indirect movement, as disclosed in Becker, when treating a patient using clear aligners.

III. LEVEL OF ORDINARY SKILL IN THE ART

Align alleges that ClearCorrect “lowered” the level of ordinary skill in the art compared to a prior IPR involving a related patent. These arguments are a distraction: Align does not defend an alternative level of skill; Align does not contend that ClearCorrect’s proposed definition in this proceeding is substantively incorrect; Align’s attempts to discredit Dr. Yadav’s experience are wrong; and most fundamentally, Align does not explain how any POSITA definition would change the obviousness analysis.

A. Align Does Not Dispute ClearCorrect’s Level of Skill

Align criticizes ClearCorrect’s proposed POSITA definition but never proposes an alternative. With only one definition before it—ClearCorrect’s—the Board should adopt that definition. Moreover, if the doctorate-based definition from the prior 444 IPR were applied here, Align’s own expert—Dr. Valley—would not qualify as a POSITA, as she does not hold a doctorate in dental science (Ex-

1039, 21:4-9) in contrast to Dr. Yadav who does (Ex-1029, 1)—which explains why Align attacks ClearCorrect’s proposal without offering its own.

Align focuses on differences between ClearCorrect’s proposed definition and a definition advanced in a prior IPR proceeding involving a related patent. Align omits, however, that (1) in that proceeding, Align argued that the level of skill proposed was too high, and (2) in the co-pending district court litigation Align advances a level of skill that is more consistent with the level ClearCorrect proposes here.

In IPR2017-01829, Align criticized ClearCorrect’s proposed ’444 patent skill level requiring a doctorate in dental science as reflecting a “relatively high skill level” that was “highly suspect.” Ex-1036, 28 n.5. And in the currently co-pending district court litigation, Align proposed a skill level for the ’456 and ’444 patents that, consistent with ClearCorrect’s proposal here, does not require a doctorate in dental science. Ex-1037, ¶19 (Align expert stating a POSITA would have included “an orthodontist or dental practitioner with a Doctor in Dental Surgery (‘DDS’) degree or Doctor in Dental Medicine (‘DMD’) degree....”).² Align recently proposed an even lower level of skill for the ’444 patent that does

² While this paragraph references the ’444 patent, Dr. Kuo elsewhere states that his references to the ’444 patent apply equally to the ’456 patent. Ex-1037, ¶16.

not require a doctorate in dental science, arguing that a POSITA would have been part of an interdisciplinary team having an optional member with “a university degree related to dentistry (e.g., DDS, DMD) with at least two years of work experience in orthodontics.” Ex-1038, ¶114. Here, ClearCorrect has responded to Align’s criticism that the prior skill level was too high and proposed a skill level *consistent with* Align’s position in the district court.

Align reliance on *Revvo Techs., Inc. v. Cerebrum Sensor Techs., Inc.*, is misplaced. IPR2025-00632, Paper 20 (Director Nov. 3, 2025). *Revvo* cautions against simultaneously advancing conflicting positions in different forums (e.g., PTAB vs. district court) in a manner that risks unfair advantage. ClearCorrect is doing no such thing: ClearCorrect changed its position proceedings between two proceedings separated by years (the prior ’444 IPR in 2017 and this one in 2025) and explained why (responding to Align’s criticism and updated information about the interdisciplinary nature of the relevant teams).

It is Align that runs afoul of *Revvo* by advancing simultaneously conflicting positions in parallel proceedings. Although Align does not address the required level of education, its expert, Dr. Valley, separately asserts that a POSITA must have experience with “digital platforms for designing treatments using clear aligners,” even though Align did not include such a requirement in the co-pending

litigation. *Compare* Ex-2013, ¶¶34-35, *with* Ex-1038, ¶114, Ex-1037, ¶19. This is the type of forum-dependent gamesmanship that *Revvo* was intended to prevent.

Align does not argue that ClearCorrect's proposed POSITA definition in this proceeding is incorrect, and the Board should not credit Align's arguments where it proposed no definition itself and where it would not resolve any substantive issues.

B. Dr. Yadav Has Relevant Experience Using Clear Aligners

Align argues that Dr. Yadav lacked experience using clear aligners, but that is wrong. Between 2003-2006, Dr. Yadav had experience using Essix-type clear aligners for tooth alignment, including in treatments involving as many as six stages. Ex-1040, ¶¶4-5.

Align's argument is also contradicted by its own expert. POR, 7. Dr. Valley, admitted at her deposition that Essix aligners are a type of clear aligner. Ex-1039, 22:10-23:11. In her declaration, she attempts to distinguish Essix as a different "type" of aligner, but Align provides no support for limiting the level of skill to only certain types of clear aligners. Ex-2013, ¶37. And to the extent Align suggests that a POSITA in 2006 required experience with Invisalign aligners, that is belied by the record. Even Dr. Valley acknowledged that use of such aligners was not prevalent in 2006. Ex-1039, 25:16-26:10, 26:16-27:13.

Dr. Valley argues that Essix-type clear aligners were not intended to move teeth "over multiple stages," but that is contradicted by the record. Ex-2013, ¶37.

Using Essix-type clear aligners to effect tooth movement, including over multiple stages, were well known at the relevant time. *See* Ex-1041, 1-3 (describing crossbite correction using a series of two Essix aligners); Ex-1016, 26, 30-38 (describing various tooth movements and multi-stage treatments using Essix-type clear aligners); Ex-1042, 4 (describing using Essix aligners for “correcting mild discrepancies in the alignment of teeth”); Ex-1040, ¶5. Align’s efforts to discount Dr. Yadav’s experience with Essix-type clear aligners therefore fail.

Even under Align’s narrow view that experience with Essix-type clear aligners does not qualify, Dr. Yadav was knowledgeable about various types of aligners prior to 2006 and has obtained extensive experience with various types of clear aligners since 2006. Ex-1040, ¶¶6-8. The Federal Circuit has held that an expert “need not have acquired that skill level prior to the time of the invention to be able to testify from the vantage point of a person of ordinary skill in the art.” *Osseo Imaging, LLC v. Planmeca USA Inc.*, 116 F.4th 1335, 1341 (Fed. Cir. 2024). Rather, “an expert can acquire the necessary skill level later and develop an understanding of what a person of ordinary skill knew at the time of the invention.” *Id.* Here, through his research, knowledge of literature in the field, and teaching, Dr. Yadav developed an extensive understanding of clear aligner systems (other than Essix-type clear aligners), and techniques from the 2006 time period. Ex-1040, ¶8. Moreover, he has extensive personal experience using various clear

aligner systems, having supervised and treated approximately 1,500 patients using clear aligner systems since 2006. Ex-1040, ¶7.

C. Dr. Valley’s Digital Platforms Argument Is Factually Wrong and Unsupported

Dr. Valley criticizes Dr. Yadav for not stating that he had experience with “digital platforms” associated with clear aligner treatment. Ex-2013, ¶36.

However, neither ClearCorrect nor Align has proposed a level of skill that requires this experience. Nor has either party required such experience in the co-pending district court litigation. Ex-1037, ¶19; Ex-1038, ¶114. Dr. Valley’s criticism is also inconsistent with the state of the art, as she admitted that using “digital platforms for designing treatments using clear aligners” in or before 2006 was neither prevalent nor widely accepted in the orthodontic field at that time, and was not broadly adopted by orthodontists until several years later. Ex-1039, 26:16-27:15, 28:7-16.

In any event, Dr. Yadav has significant experience treating patients using clear aligner systems and the digital platforms associated with those systems for treatment planning. Ex-1040, ¶7. That experience only reinforced his understanding of prior techniques, as digital platforms merely automated the type of corrections that were previously done manually. *Id.* Moreover, through his

knowledge of literature in the field, he is also aware of systems that existed in the 2006 timeframe. *Id.*, ¶8.

D. Dr. Yadav’s Proposed POSITA Level Is Consistent With the Petition

The Petition set forth a proposed level of skill in the art, including “experience using clear aligners.” Pet., 6. Align notes that this reference to clear aligners is missing from Dr. Yadav’s level of skill, but as explained in Dr. Yadav’s supplemental declaration, that omission was merely a typographical error. Ex-1040, ¶3. Align does not explain how a clerical omission—now corrected—caused any prejudice, especially where (1) Align proposed the same requirement in district court that ClearCorrect proposes in this proceeding, (2) the Petition set forth the correct level of skill, and (3) Align was contemporaneously provided with Dr. Yadav’s declarations in related proceedings setting forth the correct skill level. Ex-1037, ¶19; Ex-1045, ¶24; Ex-1046, ¶23.

Finally, Align does not identify any teaching of Chishti-511, Sachdeva, or Becker that a POSITA under some different standard would have understood differently than a POSITA with the qualifications ClearCorrect proposes. Nor does Align argue that a more experienced POSITA would not have found a motivation to combine the references. Align’s POSITA arguments are, at bottom, an attempt to disqualify Dr. Yadav—not a substantive challenge to the obviousness analysis.

Respectfully submitted,

Dated: May 12, 2026

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CERTIFICATE OF WORD COUNT

The undersigned certifies that the foregoing **PETITIONER'S REPLY** contains 5,588 words and complies with the type-volume limitation in 37 C.F.R. § 42.24.

Dated: May 12, 2026

By: /Luke McCammon/
Luke McCammon, Lead Counsel
Reg. No. 70,691

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), the undersigned certifies that the foregoing
PETITIONER'S REPLY and **EXHIBITS 1036-1046** were served on
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