

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

ALIGN TECHNOLOGY, INC.,	:	
	:	
Plaintiff,	:	
	:	
v.	:	C.A. No. 18-1949-LPS-CJB
	:	
3SHAPE A/S, et al.,	:	
	:	
Defendants.	:	

MEMORANDUM ORDER

Pending before the Court is Defendants’ motion to dismiss. (D.I. 11) Having considered the parties’ briefing (D.I. 12, 16, 19) and related materials, and having heard oral argument on June 18, **IT IS HEREBY ORDERED** that Defendants’ motion to dismiss (D.I. 11) is **GRANTED IN PART** and **DENIED IN PART**.

1. The motion is **GRANTED** with respect to claims 1-9, 16, 17, and 21 of U.S. Patent No. 7,357,634 (“the ’634 Patent”), as those claims are directed to unpatentable subject matter pursuant to 35 U.S.C. § 101.

2. The motion is **DENIED** with respect to claims 10-15, 18-20, 22, and 23 of the ’634 Patent, and claims 1-20 of U.S. Patent No. 9,844,420 (“the ’420 Patent”).¹

Dental professionals traditionally formulate orthodontic treatment plans by manually examining x-rays, photographs, and molds to visualize a treatment path and select the appliances

¹ The Court provided its reasons for denying the motion with respect to the ’420 Patent in its July 5 Memorandum Order. (D.I. 28) The Court adopts and hereby incorporates by reference the discussion of legal standards governing motions to dismiss and patentable subject matter set out in *Align Tech., Inc. v. 3Shape A/S*, 339 F. Supp. 3d 435, 440-43 (D. Del. 2018).

necessary to create and implement that path. '634 Patent, col. 1 ll. 20-30. The '634 Patent proposes digitizing that process, whereby a dental professional receives a virtual model of a patient's teeth, and can select different virtual orthodontic appliances that are then "automatically place[d] . . . in the proper position and orientation" on the virtual model. *Id.* at col. 1 ll. 52-57; col. 3 ll. 27-38, 64-67.

In order to automatically place the virtual appliances on the virtual model, the '634 Patent proposes a method of arranging the virtual appliances "in the same spatial coordinate system or making use of a transform function to relate the coordinate systems of the [appliances]." *Id.* at col. 1 ll. 57-60. The Patent proposes two ways to assign the "standard position and orientation" to the appliances, *id.* at col. 1 ll. 49-50: (1) using a physical "jig" that "allows [the *physical* appliances] to be held in the same spatial location" while being scanned and digitized (i.e., the orientation information is incorporated into the scanning process), and/or (2) orienting a plurality of *virtual* appliances relative to one another in software. *Id.* at col. 2 l. 51-col. 3 l. 18.

Step 1. While the parties' arguments predominantly focus on claim 1,² all of the asserted claims are directed to the abstract idea of "allow[ing] the doctors to easily change or substitute different brackets during treatment planning." '634 Patent, col. 1 ll. 52-54; *see also* D.I. 12 at 8. Independent claims 1, 10, 15, 16, 17, and 21 each have similar steps of: (1) receiving or providing a digital model of a dental appliance; (2) mapping the digital model to a standard orientation or feature; and (3) interchanging/replacing a first appliance with a second appliance. Independent claim 18 foregoes some of the other claimed steps to focus on the "mapping"

² Plaintiff nonetheless argues that claim 1 is not representative (D.I. 16 at 13), and the Court does not treat it as such.

limitation, but is also limited to replacing virtual appliances on a virtual tooth model. None of the dependent claims adds anything to bring them out of the realm of abstraction.

Plaintiff repeatedly stresses that the “mapping” limitation³ is directed to a non-abstract idea. (D.I. 22) The Court disagrees. As discussed previously, the specification discloses two embodiments of the “mapping” limitation: (1) the jig embodiment, and (2) the virtual orientation embodiment. *Id.* at col. 2 l. 51–col. 3 l. 18. In the Court’s view, the jig embodiment may well describe a non-abstract idea: a physical device that imparts standard position and orientation information to the virtual appliance automatically during scanning. The claims, however, are not so narrow.⁴ *See Oatey Co. v. IPS Corp.*, 514 F.3d 1271, 1277 (Fed. Cir. 2008) (“At leas[t] where claims can reasonably [be] interpreted to include a specific embodiment, it is incorrect to construe the claims to exclude that embodiment, absent probative evidence on the contrary.”); *see also* Tr. at 80 (Plaintiff asserting any embodiment “that involves the automatic placement and the mapping functionality is captured by the claims”).

³ Plaintiff also argues the Court must construe the “mapping” limitation before making any patentability determination. (D.I. 16 at 7-8; D.I. 22 at 2) Plaintiff proposes a construction consistent with the term’s plain and ordinary meaning: “mapping the digital model of the dental appliance to the standard position and orientation by setting a plurality of digital models to the standard position and orientation and automatically placing a second dental appliance at the same position as a first dental appliance.” (D.I. 22 at 2) Even if the Court were to adopt this construction, it would not change the outcome.

⁴ No other reasonable construction of the “mapping” limitation would render the claims non-abstract. Any such construction would restrict the “mapping” limitation of each independent claim to the jig embodiment, which would read out (or nullify any dependent claims directed to) the virtual orientation embodiment. *See, e.g.*, ’634 Patent, cls. 1, 6; *see also Marine Polymer Techs., Inc. v. HemCon, Inc.*, 672 F.3d 1350, 1368 (Fed. Cir. 2012) (“Where a particular construction of an independent claim would nullify claims that depend from it, the doctrine of claim differentiation creates a presumption that such a construction is improper.”); *Invitrogen Corp. v. Biocrest Mfg., L.P.*, 327 F.3d 1364, 1369 (Fed. Cir. 2003) (“[C]onstruing a claim to exclude a preferred embodiment is rarely, if ever, correct and would require highly persuasive evidentiary support.”) (internal quotation marks omitted).

The claims also encompass the virtual orientation embodiment, which is an abstract process of orienting virtual appliances relative to one another within a virtual space. *Id.* at col. 2 l. 60-col. 3 l. 18. This embodiment is a mental process of orienting objects for comparison, implemented on a generic computer. *See Versata Dev. Grp. v. SAP Am., Inc.*, 793 F.3d 1306, 1335 (Fed Cir. 2015) (“Courts have examined claims that required the use of a computer and still found that the underlying, patent-ineligible invention could be performed via pen and paper or in a person’s mind.”); *see also In re Brown*, 645 F. App’x. 1014, 1017 (Fed Cir. 2016) (finding abstract claims that “encompass the mere idea of applying different known hair styles to balance one’s head” to be idea “capable . . . of being performed entirely in one’s mind”); ’634 Patent, col. 5 l. 25-col. 6 l. 3.

The Patent does not disclose any specifics that speak to an improvement in computer functionality. Without such specifics, this case is distinguishable from *McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299 (Fed. Cir. 2016), on which Plaintiff relies. (*See* D.I. 22 at 3; Tr. at 79, 86). There, the patent at issue proposed an automated process of synchronizing animated mouth movements with pre-recorded audio. *See McRO*, 837 F.3d at 1306-07. The claim called for obtaining “set[s] of rules” to define output morph weight set streams, which ultimately influenced the animations. *Id.* at 1307. The specification disclosed that these rules “automatically set a keyframe at the correct point to depict more realistic speech, achieving results similar to those previously achieved manually by animators.” *Id.* Using specific rules “to set the morph weights and transitions between phonemes” rendered the invention non-abstract. *Id.* at 1313 (internal quotation marks omitted). The ’634 Patent, on the other hand, lacks such analogous specifics. Without more, the Patent does not teach an improvement in the computer functionality itself, but rather is directed to an abstract idea.

Step 2. Independent claims 1 and 21 do not provide an inventive concept. These claims are directed to selecting and mapping a standard position and orientation such that a plurality of appliances can be “automatically plac[ed] . . . at a same position.” ’634 Patent, cl. 1; *see also* cl. 21 (claiming “digitally placing a first one of the digital models” and “replacing the first digital model with a second digital model”).

Plaintiff argues there is a fact dispute as to whether the “mapping” step is conventional. (D.I. 16 at 9) While the jig embodiment, or a specific (unclaimed and undescribed) implementation of the virtual orientation embodiment may be non-routine or non-conventional, the broad “mapping” limitation (even adopting *arguendo* Plaintiff’s proposed construction) encompasses the routine and conventional mental process of orienting objects for comparison as implemented on a generic computer. *See Electric Power Group, LLC v. Alstom S.A.*, 830 F.3d 1350, 1355-56 (Fed. Cir. 2016) (finding claims lacked inventive concept when they “do not require an arguably inventive set of components or methods, such as measurement devices or techniques, that would generate new data. They do not invoke any assertedly inventive programming. Merely requiring the selection and manipulation of information . . . by itself does not transform the otherwise-abstract processes. . . . Indeed, the essentially result-focused, functional character of claim language has been a frequent feature of claims held ineligible under § 101.”); *In re Morinville*, 767 Fed. App’x. 964, 969 (Fed. Cir. 2019) (rejecting arguments that “automatically” generating information is inventive concept, despite lack of prior art teaching automatic version of process). Thus, for many of the same reasons identified in the Step 1 analysis, claims 1 and 21 also lack an inventive concept.

Dependent claims 2 and 3 do not add an inventive concept. Claim 2 recites “placing . . . a first [virtual] dental appliance on the tooth model,” while claim 3 recites

“interchanging the first dental appliance with a second dental appliance.” These claims merely apply the “automatically placing” step from claim 1 to a tooth model. The Patent, however, teaches virtual orthodontics – including “representations of the teeth and [] orthodontic components such as brackets and wire” – is routine and conventional. ’634 Patent, col. 1 ll. 33-37. It is also the case that Plaintiff does not identify any specific inventive concept in claims 2 and 3.⁵ (D.I. 16 at 15-16) The record the Court may look to does not provide a sufficient basis to hold that performing the conventional step of orienting virtual appliances for comparison and applying them to virtual tooth models is itself an inventive concept. *See Evolutionary Intelligence LLC v. Sprint Nextel Corp.*, 677 Fed. App’x. 679, 680 (Fed. Cir. 2017) (“Whether analyzed individually or as an ordered combination, the claims recite those conventional elements at too high a level of generality to constitute an inventive concept.”). This reality supports the Court’s conclusions.

Dependent claim 4 does not provide an inventive concept. The claim recites “scanning a dental appliance to create the digital model.” ’634 Patent, cl. 4. Plaintiff does not identify any specific inventive concept in claim 4. (D.I. 16 at 15-16) Nor does the Patent treat the scanning feature as inventive; the specification describes several conventional processes for digitizing the appliance, ’634 Patent, col. 2 ll. 18-20, and acknowledges that virtual orthodontics are routine and conventional, ’634 Patent, col. 1 ll. 33-37.

Dependent claims 5-9 do not provide an inventive concept. Claims 5-7 recite using a “base object” to create the “standard position and orientation.” ’634 Patent, cl. 5-7. In other

⁵ The Court is not shifting the burden to Plaintiff to prove patentability under 35 U.S.C. § 101. Rather, the Court is looking at whether Plaintiff has identified any inventive concept. *See Aatrix Software, Inc. v. Green Shades Software, Inc.*, 882 F.3d 1121, 1126-27 (Fed. Cir. 2018) (“We have held that patentees who adequately allege their claims contain inventive concepts survive a § 101 eligibility analysis under Rule 12(b)(6).”).

words, one object (such as a first virtual appliance) is selected as the reference for its position and orientation, to which other virtual appliances are compared and oriented. *Id.* at col. 2 l. 60-col. 3 l. 18. Claim 8 then states a “coordinate system” (e.g., x-y-z dimensions) is the basis for the standard position and orientation. ’634 Patent, cl. 8. Lastly, claim 9 broadly recites the standard position/orientation is determined based on “predetermined dimensions and features on the dental appliance,” ’634 Patent, cl. 9, but fails to provide any specifics; any virtual appliance will have some “feature” with which to orient it. Orienting objects relative to one another, or relative to a coordinate system, is routine and conventional, and Plaintiff does not argue otherwise. (D.I. 16 at 15-16)

By contrast, claims 10-14 do provide an inventive concept. Independent claim 10 recites “the standard position and orientation is determined using predetermined dimensions and features on the dental appliance” (like claim 9), and adds that “one feature is an appliance slot.” ’634 Patent, cl. 10. The specification discloses: “[i]n one embodiment, the bracket’s slot can be used to attain the same location for models within a manufacturer’s line as well as across manufacturers’ lines because it is one of the most consistent geometric features with the greatest dimensional similarity among all brackets.” *Id.* at col. 2 ll. 55-59. The Patent identifies the use of the bracket slot as a consistent reference point with which to virtually orient each of the appliances, which serves as a sufficient inventive concept to survive a motion to dismiss. (*See* D.I. 16 at 14)

Independent claim 15 provides an inventive concept. While the claim recites many of the same features of the other independent claims, it also claims “wherein the bracket is a contralateral bracket, comprising mirroring the bracket relative to a reference plane or surface to

create a contralateral model.” ’634 Patent, cl. 15. This is a technical step, and there is at least a dispute as to whether such mirroring is routine and conventional. (*See* D.I. 16 at 14-15)

Independent claim 16 does not provide an inventive concept. The distinguishing feature of claim 16 is that one of the selection criteria for interchanging the appliance is “a best fit on the tooth, a material fit, an obtrusiveness measure, and a cost.” ’634 Patent, cl. 16. Plaintiff does not argue (nor could it reasonably do so) that any of these considerations are non-routine or non-conventional; an orthodontist would take into consideration one or more of these factors when selecting a particular appliance as part of a treatment plan. Instead, Plaintiff argues only that the “mapping” technique of claim 16 is an inventive concept (D.I. 16 at 15), but the Court is not persuaded, for the reasons discussed above.


Independent claim 17 does not provide an inventive concept. The distinguishing features of claim 17 are the additional steps of “generating a template to place the dental appliance on a tooth” and “fabricating a wire based on the bracket’s position and orientation.” ’634 Patent, cl. 17. While Plaintiff argues the “generating” step⁶ is non-conventional, the specification instead describes how “[t]he system can also be used to model the effects of more traditional appliances . . . and therefore be used to generate optimal designs and treatment programs for particular patients.” ’634 Patent, col. 3 ll. 53-57. The Patent fails to set forth how any templates or optimal treatment programs are generated and, therefore, fails to provide an inventive concept. *See Evolutionary Intelligence*, 677 Fed. Appx. at 680. Furthermore, Plaintiff does not argue (nor could it reasonably do so) that fabricating an orthodontic appliance (including a wire) after establishing a treatment plan is non-routine or non-conventional. (D.I. 16 at 15)

⁶ Plaintiff does not argue this term must be construed before deciding validity under § 101. (*See* D.I. 22 at 2)

Claims 18-20 provide an inventive concept.⁷ The distinguishing feature of independent claim 18 is that there is a “common feature element on each bracket” to automatically orient each subsequent bracket. ’634 Patent, cl. 18. While “common feature element” arguably encompasses features such as the general shape of the bracket – the comparison of which would be conventional and routine – it might also be reasonably construed as a dedicated structural “element” common to all brackets (such as a slot), which may be non-routine and non-conventional. Therefore, potential claim construction and fact disputes preclude granting the motion with respect to claims 18-20.

Dependent claims 22 and 23 provide an inventive concept: the same “common feature element” of claim 18. Hence, even though claim 21 lacks an inventive concept, claims 22 and 23 survive the motion.

September 19, 2019
Wilmington, Delaware



HONORABLE LEONARD P. STARK
UNITED STATES DISTRICT JUDGE

⁷ Claims 18-20 rise and fall together. If claim 18 is found to be routine and conventional, claims 19 and 20 do not independently contribute an inventive concept. Rather, they restate the mapping and replacing limitations included in other independent claims.