

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ATHENA AUTOMATION LTD.,
Petitioner,

v.

HUSKY INJECTION MOLDING SYSTEMS LTD.,
Patent Owner.

Case IPR2013-00290
Patent 7,670,536 B2

Before JENNIFER S. BISK, MICHAEL J. FITZPATRICK, and
GEORGIANNA W. BRADEN, *Administrative Patent Judges*.

BISK, *Administrative Patent Judge*.

AMENDED FINAL WRITTEN DECISION ON REMAND
35 U.S.C. § 144 and 35 U.S.C. § 318(a)

BACKGROUND

This Decision addresses the United States Court of Appeals for the Federal Circuit’s remand in *Husky Injection Molding Sys. v. Athena Automation Ltd.*, 838 F.3d 1236 (Fed. Cir. 2016).

On May 20, 2013 a Petition (Paper 3, “Pet.”) was filed by Athena Automation Ltd. (“Petitioner”) challenging claims 1–22 of U.S. Patent No. 7,670,536 B2 (Ex. 1001, “the ’536 patent”) owned by Husky Injection Molding Systems, Ltd. (“Patent Owner”). We instituted an *inter partes* review (Paper 18, “Inst. Dec.”) and, after briefing and oral argument, we issued a Final Decision (Paper 45, “Final Dec.”) finding claims 1, 4–16, 18, and 20–22 anticipated by Arend,¹ but finding that Petitioner did not meet its burden to show that claims 1–7, 12, and 17–20 were anticipated by Glaesener² with portions of Choi³ incorporated by reference. Both parties appealed to the Federal Circuit.

On September 23, 2016, the Federal Circuit issued a decision, dismissing-in-part and vacating and remanding-in-part the Final Decision. *Husky*, 838 F.3d at 1249. Relevant to this Decision, the Federal Circuit vacated our finding relating to anticipation by Glaesener with respect to claims 2, 3, 17, and 19 (“the remanded claims”) and remanded the case for further consideration of Petitioner’s challenge of these claims. *Id.* Specifically, the Federal Circuit held that Glaesener incorporates “at least some portions of Choi,” contrary to our finding in the Final Decision, and, thus, remanded “for the Board to evaluate anticipation in the first instance in light of Glaesener/Choi.” *Id.* The mandate issued November 14, 2016.

Following a teleconference, during which the parties disagreed upon the issues before us in this remanded proceeding, we authorized each of the parties to

¹ U.S. Patent 5,417,913 (Ex. 1004).

² U.S. Patent Application 2004/0208950 (Ex. 1002).

³ U.S. Patent 5,753,153 (Ex. 1003).

file a post-remand brief. Paper 56. The parties filed their briefs on February 10, 2017. Paper 59 (“PO Remand Br.”); Paper 60 (“Pet. Remand Br.”).

After considering the entire record, we conclude that Petitioner has shown, by a preponderance of the evidence, that claims 2, 3, 17, and 19 are anticipated by Glaesener with the relevant portions of Choi incorporated by reference.

DISCUSSION

A. *The ’536 Patent*

The ’536 patent is titled “Molding-System Clamp” and relates to injection molding machines that inject, under pressure, injectable molding material into a mold cavity. Ex. 1001, 8:8–10, 37–42, 63–66. The mold cavity is created by two halves of a mold, each mounted on a platen, closed against each other. *Id.* at 9:20–24, 57–61. Once closed, the mold is held in that position by a clamp assembly, and the two platens are secured by a locking mechanism. *Id.* at 8:37–42; 9:29–31; Figs. 2A, 2B.

The locking mechanism includes both a lock member associated with a rod and a complementary lock member associated with a platen. *Id.* at Abstract. Once the two members of the locking mechanism are engaged (locked), clamp actuators apply a clamping force to keep the mold closed as it receives molding material under pressure. *Id.* at 8:39–42. This clamping force causes uneven load stresses on the platen. *Id.* at 13:42–45. Thus, some portions, or zones, of the platen receive less load stress in comparison to the stress experienced by other zones. *Id.* The uneven stress causes the platen to bend, or flex, more at some zones (relatively higher flex zones) relative to others (relatively lower flex zones). *Id.* Accordingly, the ’536 Patent discloses engaging the two lock members at a position that is proximate to a relatively lower flex zone of the platen resulting in reduced wear associated with the teeth of the locking mechanisms. *Id.* at 13:55–67.

Figures 2A and 2B of the '536 patent, reproduced below, depict the clamp assembly of the molding system, according to one embodiment, in which the clamp assembly is placed in a mold opened position.

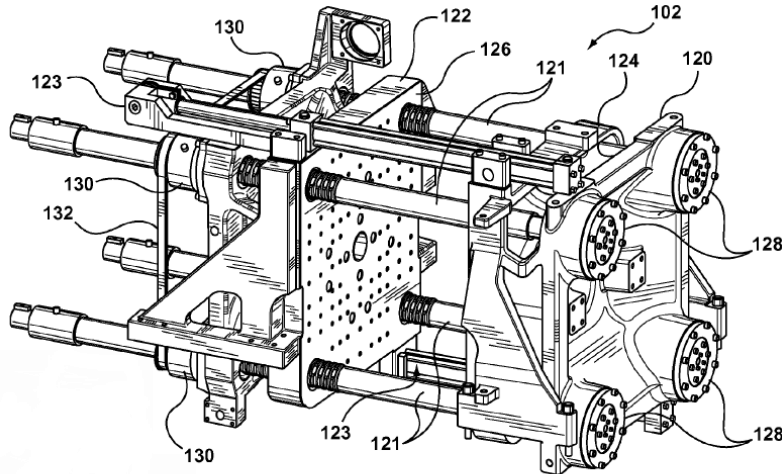


FIG. 2A

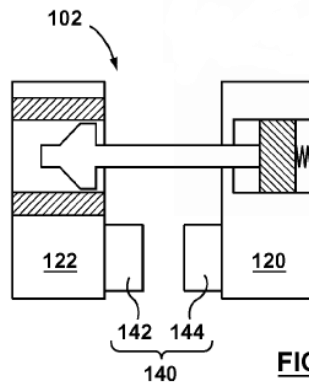


FIG. 2B

Figure 2A of the '536 Patent illustrates clamp assembly 102 in the mold opened position. Ex. 1001, 7:29–31. Clamp assembly 102 includes (i) stationary platen 120, (ii) movable platen 122, (iii) platen stroke actuators 123, (iv) clamp actuators 128, (v) rods 121, and (vi) tie-bar locking mechanisms 130. Figure 2A does not depict the mold. *Id.* at 8:62–63. Figure 2B depicts the clamp assembly of Figure 2A with mold portions 142 and 144 visible in the mold opened position—the mold portions are separated from each other. *Id.* at 8:58–62; 9:47–50.

Figure 8A of the '536 patent, reproduced below, depicts clamp actuator 128, also referred to as a clamp.

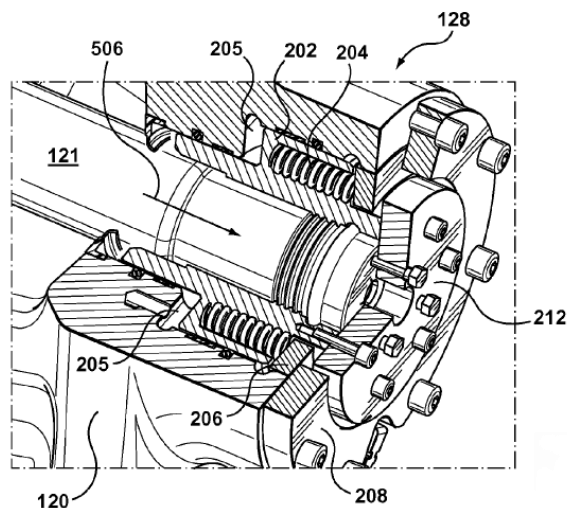


FIG. 8A

Figure 8A illustrates the clamp of clamp assembly 102. Ex. 1001, 7:51–52. The clamp is actuated so that clamping force 506 is applied to rod 121. *Id.* at 13:12–14.

The '536 patent provides a series of figures illustrating an exemplary embodiment of clamp assembly 102 at various times during the molding process. Each figure depicts positions of the two mold portions and clamp. Several of the figures explicitly show locking teeth 238 and 248 and whether the teeth are separated by a gap or not.

Figures 5C, 6C, and 7B are reproduced side-by-side below. In Figures 6C and 7B, teeth 238 are shown in yellow, and teeth 248 are shown in green (coloring added). The gap between the teeth, unlabeled in the original figure 6C, is shown in red, as annotated.

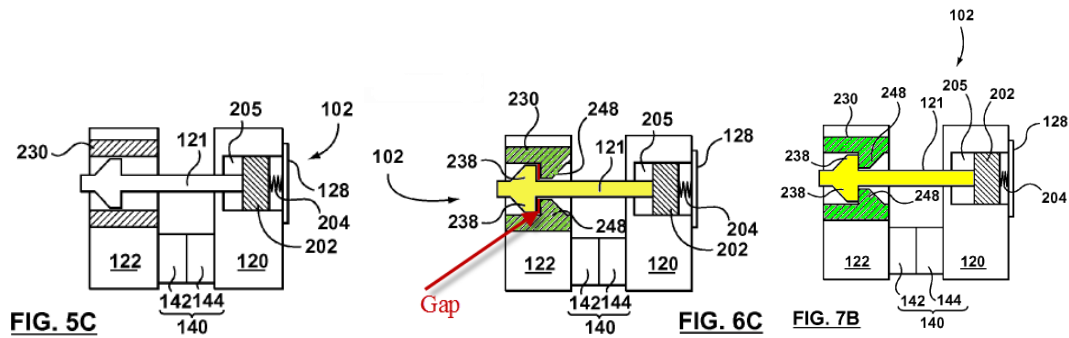


Figure 5C depicts the locking mechanism in an “unlocked condition.” *Id.* at 7:41–44. The mold portions are in the “mold closed position.” *Id.* at 12:32–36. Figure 6C depicts the locking mechanism in a “lockable condition.” *Id.* at 7:45–46. The mold portions are in the “mold closed position.” *Id.* at 12:50–54. According to the ’536 patent, “[t]he gap between the teeth 238 and the teeth 248 is clearly visible in this view.” *Id.* at 12:54–55.

Figure 7B depicts the clamp in a “gap closed condition.” *Id.* at 7:48–50. The “gap closed condition” is defined as the condition in which “(i) the gap between the teeth 238, 248 has been taken up (that is, removed), and (ii) the teeth 238, 248 contact each other.” *Id.* at 12:65–13:3. In addition, the locking mechanism is in the “locked condition” meaning that “platen 122 is no longer movable relative to the rod 121” and the fluid in chamber 205 is pressurized “sufficiently enough to push the piston 202 away from the platen 122.” *Id.* at 13:3–7. As a result, “rod 121 is pushed away from the platen 122 sufficiently enough to take up the gap between the teeth 238, 248” so that the teeth 238, 248 abut each other. *Id.* at 13:7–10. Spring 204 is compressed. *Id.* at 13:10–11.

In Figures 8B and 9B, reproduced side-by-side below, teeth 238 are shown in yellow, and teeth 248 are shown in green (coloring added).

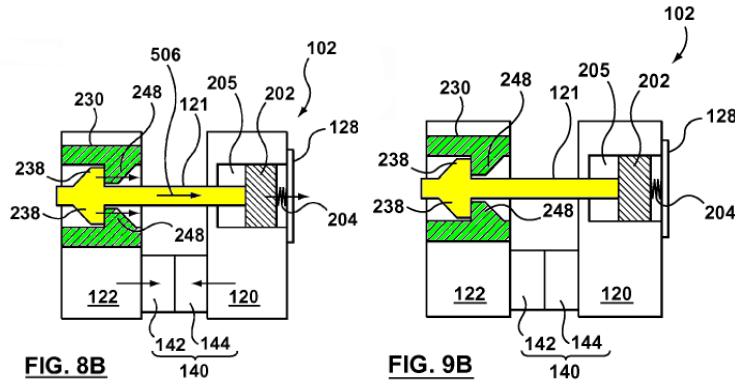
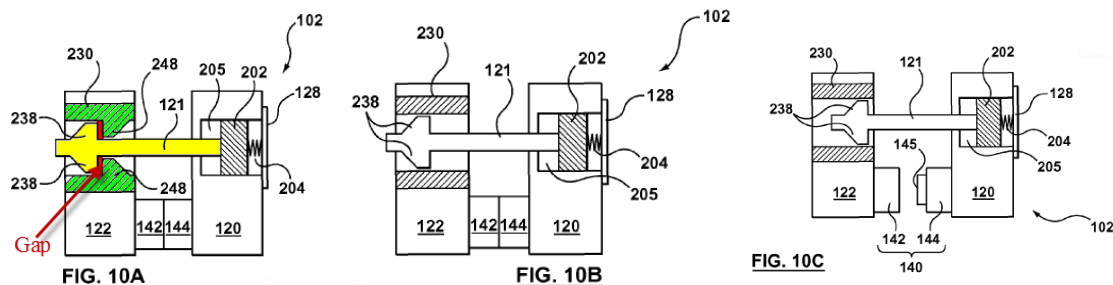


Figure 8B depicts an "actuated" clamp. *Id.* at 7:51–52. Mold portions 142 and 144 are in the "mold closed position" and the locking mechanism is in the "locked condition." *Id.* at 13:28–30. In addition, "rod 121 is stretched as a result of transmitting the clamping force 506 to the platen 122." *Id.* at 13:30–31. Figure 9B depicts the clamp in a "decompressed condition." *Id.* at 7:56–58. Mold portions 142 and 144 are in the "mold closed position" and the locking mechanism is in the "locked condition." *Id.* at 15:14–16. In this figure, "[t]he mold break force has not been applied." *Id.* at 15:16–17.

Figures 10A, B, and C, reproduced side-by-side below, depict clamp assembly 102 in a "post mold break condition." *Id.* at 7:59–61.



In Figure 10A, the locking mechanism is in the "lockable condition" and "[m]old break has occurred, and the teeth 248, 238 have become separated from each other so that, in effect, a gap exists between the teeth 248, 238." *Id.* at 15:21–25. In Figure 10B, the locking mechanism is in the "unlocked condition" and "teeth 248, 238 have been rotated away from each other so they become misaligned relative to

each other.” *Id.* at 15:26–32. Figure 10C depicts mold portions 142 and 144 once again in the “mold opened position” such that the molded article 145 may be removed from the mold cavity. *Id.* at 15:37–41.

Figure 8D of the ’536 Patent, reproduced below, depicts the lock in which the clamp is actuated.

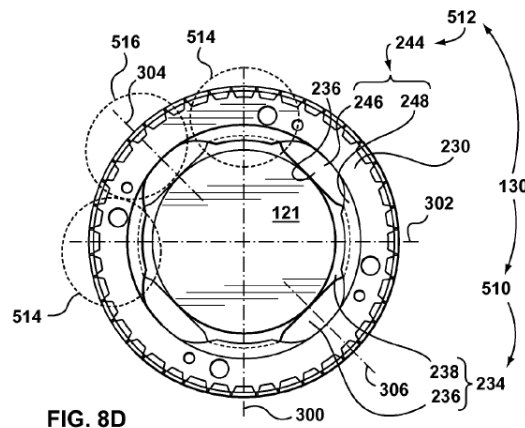


Figure 8D, above, illustrates an end view of the locking mechanism in which the lock is placed in the locked condition. *Id.* at 13:32–33. Rod 121 transmits the clamping force 506 across teeth 238 and 248. *Id.* at 13:38–40. Then the clamping force is transferred to platens 122 and 120 and ultimately to mold 140. *Id.* at 13:40–42.

The location of relative stress zones (514, 516) will depend on the structural supports of platen 122. *Id.* at 13:48–54. When the locking mechanism is actuated, teeth 238 and 248 become aligned at a position that is located proximate to a relatively lower flex zone 514. *Id.* at 13:55–60.

B. The Remanded Claims

Claims 2 and 3 depend from independent claim 1, claim 17 depends from independent claim 12, and claim 19 depends from independent claim 18. Claims 1–3, 12, and 17–19 are reproduced below.

1. A lock of a molding system having a rod and a platen, the lock comprising:

- a lock member associated with the rod that is movable between a clamped position and a released position by a clamp assembly; and

- a complementary lock member associated with the platen; the lock member and the complementary lock member cooperatively operable to move between a lockable condition and an unlockable condition; wherein

- the complementary lock member is engagable with the lock member within a relatively lower flex zone of the platen;

- the relatively lower flex zone of the platen being a portion of the platen adjacent to the rod and having a flex that is lower relative to a relatively higher flex zone of the platen also adjacent to the rod.

2. The lock of claim 1, wherein the rod is biased towards the released position, thereby maintaining a gap between the lock member and the complementary lock member during movement of the lock between the lockable condition and the unlockable condition.

3. The lock of claim 1, wherein movement of the rod to the released position by the clamp assembly creates a gap between the lock member and the complementary lock member to reduce wear therebetween when they move between the lockable condition and the unlockable.

12. A molding system comprising:

- a rod that is movable between a clamped position and a released position by a clamp assembly;

- a platen;

- a lock including:

- a lock member associated with the rod; and

- a complementary lock member associated with the platen of the molding system, the complementary lock member cooperatively operable to move between a lockable condition and an unlockable condition with the lock member, the complementary lock member being

engagable with the lock member within a relatively lower flex zone of the platen;

the relatively lower flex zone of the platen being a portion of the platen adjacent to the rod and having a flex that is lower relative to a relatively higher flex zone of the platen also adjacent to the rod.

17. The molding system of claim 12, wherein movement of the rod to the released position by the clamp assembly creates a gap between the lock member and the complementary lock member to reduce wear therebetween when they move between the lockable condition and the unlockable condition.

18. A method of actuating a lock of a molding system having a rod that is movable between a clamped position and a released position by a clamp assembly and a platen, the method comprising:

engaging a lock member associated with the rod with a complementary lock member associated with the platen at a position located proximate to a relatively lower flex zone of the platen;

the relatively lower flex zone of the platen being a portion of the platen adjacent to the rod and having a flex that is lower relative to a relatively higher flex zone of the platen also adjacent to the rod.

19. The method of claim 18, wherein moving the rod to the released position by the clamp assembly creates a gap between the lock member and the complementary lock member in the lock to reduce wear therebetween when they move between a lockable condition and an unlockable condition.

C. Claim Construction

In the Final Decision, we explicitly construed several claim terms. Final Dec. 11–25. Nothing in the Federal Circuit’s decision or in post-remand briefing from the parties indicates that any of our constructions need be revisited or that any further terms need be construed explicitly. *See Husky*, 838 F.3d 1236 at 1247–49;

PO Remand Br.; Pet. Remand Br. We, therefore, rely on the constructions, as summarized below, set forth in the Final Decision. Final Dec. 11–25.

Claim Term	Construction
lock member	encompasses a mechanism made up of at least one tooth structure (<i>id.</i> at 11)
complementary lock member	encompasses a mechanism made up of at least one tooth structure that is engagable with the tooth structure of the corresponding lock member (<i>id.</i>)
released position	a condition in which no clamping force has been applied to the rod (<i>id.</i> at 14–16)
clamped position	a condition in which the lock member and the complementary lock member are aligned, and the clamping force is applied to the rod (<i>id.</i> at 16)
the movable rod limitation ⁴	includes movement by the rod other than axial displacement in its entirety, including stretching; the states between which the rod moves may include conditions where the lock member teeth may or may not be separated by a gap (<i>id.</i> at 12–21)
relatively lower flex zone	that portion of the platen that exhibits a lower flex, compared to the flex in any other portion of the platen, in response to the application of a clamping force on the platen (<i>id.</i> at 21–24)
relatively higher flex zone	that portion of the platen that exhibits a higher flex, compared to the flex in any other portion of the platen, in response to the application of a clamping force on the platen (<i>id.</i>)

⁴ Each of the remanded claims requires “a rod” or “a lock member associated with the rod” “that is movable between a clamped position and a released position by the clamp assembly” (“the movable rod limitation”).

biased	plain and ordinary meaning, not limited to being carried out by a spring (<i>id.</i> at 25)
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D. The Asserted Prior Art

1. Overview of Glaesener

Glaesener describes an injection molding machine with a platen having reinforcing ribs that cause the edges of the platen to bend less than they otherwise would when subjected to clamping forces. Ex. 1002, Abstract, ¶ 40.

Figure 5 of Glaesener is reproduced below.

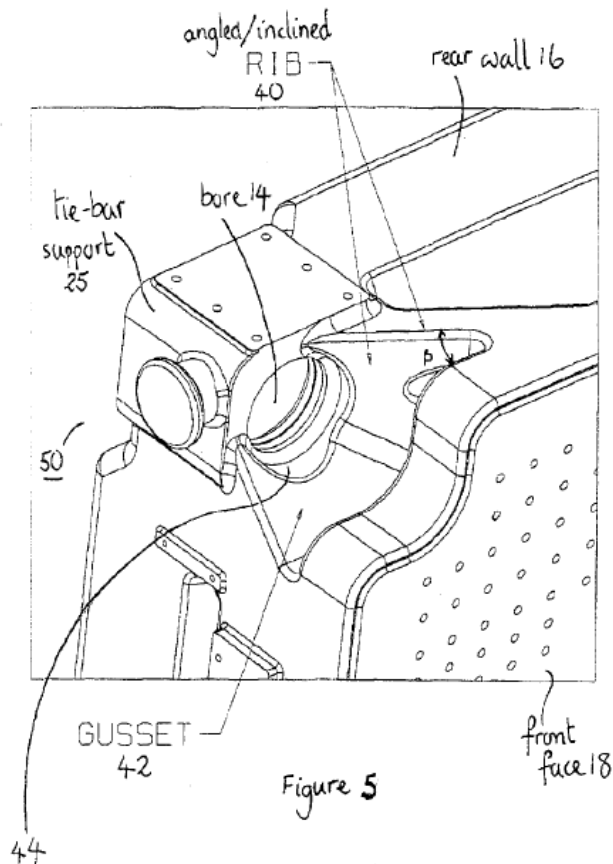


Figure 5, above, “is an enlarged perspective view of a corner of platen” 50. Ex. 1002 ¶ 33. Platen 50 includes “pairs of angled/inclined but straight ribs [40] located on at least two opposed sides of the platen.” *Id.* ¶ 38. According to Glaesener, this configuration of ribs 40 is desirable to ensure an even distribution of load to the platen during clamping. *Id.* Each angled rib 40 may be

complemented by an angled support gusset 42 that extends laterally outwardly from each angled rib and provides greater support of the platen edge. *Id.* ¶ 42.

Figure 2 of Glaesener is reproduced below.

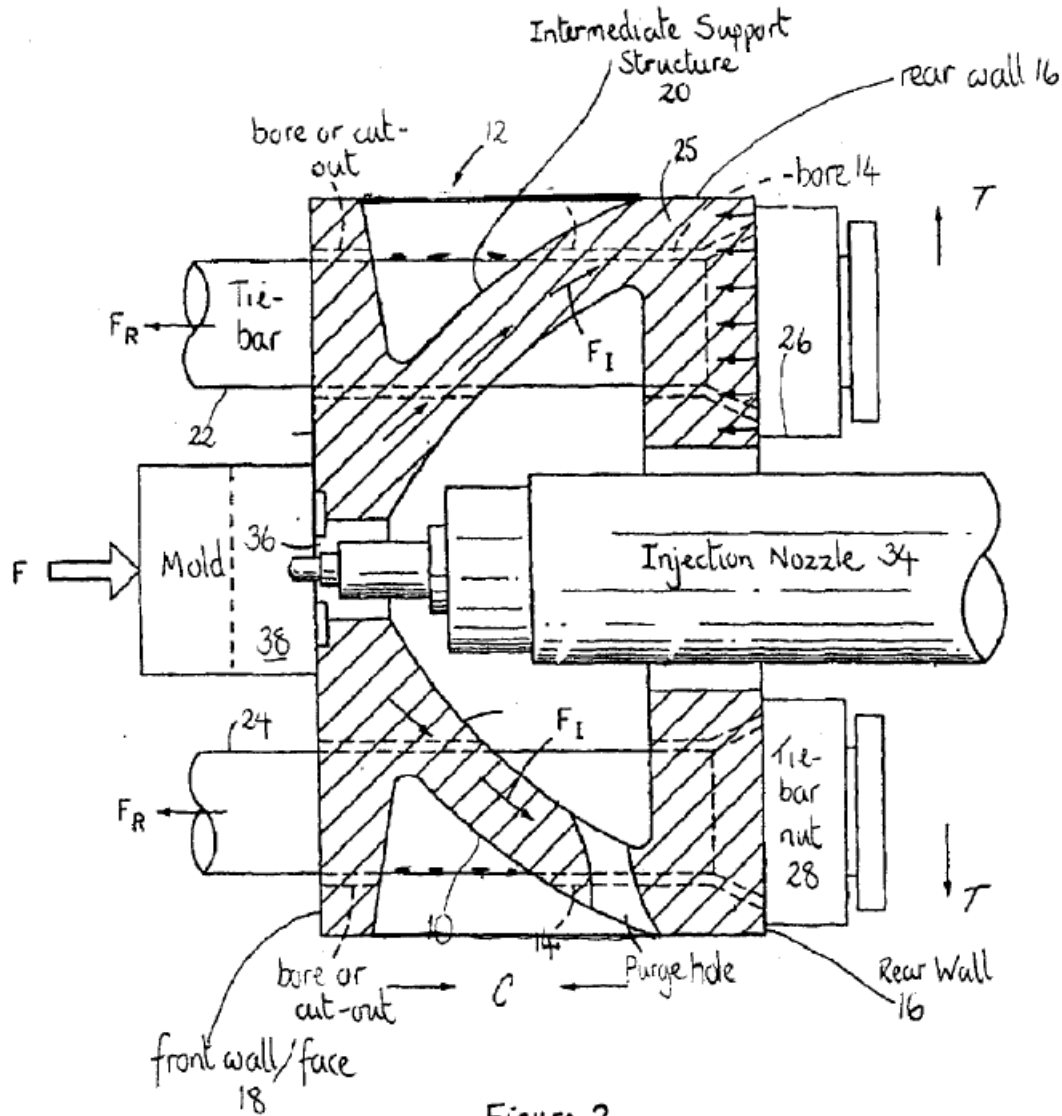


Figure 2

Figure 2 shows a sectional view of platen 12 in the context of a partial representation of an injection molding machine. Ex. 1002 ¶ 34. Platen 12 is shown with front wall or front face 18 and rear wall 16. *Id.* The two walls are coupled through intermediate support structure 20. *Id.* Tie bar pairs 22 and 24 are coupled to the rear wall 16 by tie-bar nuts 26 and 28. *Id.* ¶ 35. “The tie-bar nuts

can be secured to the rear wall 16 by any appropriate mechanism, such as the pineapple and toothed-ring mechanism described in Choi.” *Id.*

2. Overview of Choi

Choi discloses a clamping device for positioning and sustaining engagement of a movable mold platen on a carrier device relative to another platen. Ex. 1003, Abstract. Figure 3A of Choi is reproduced below.

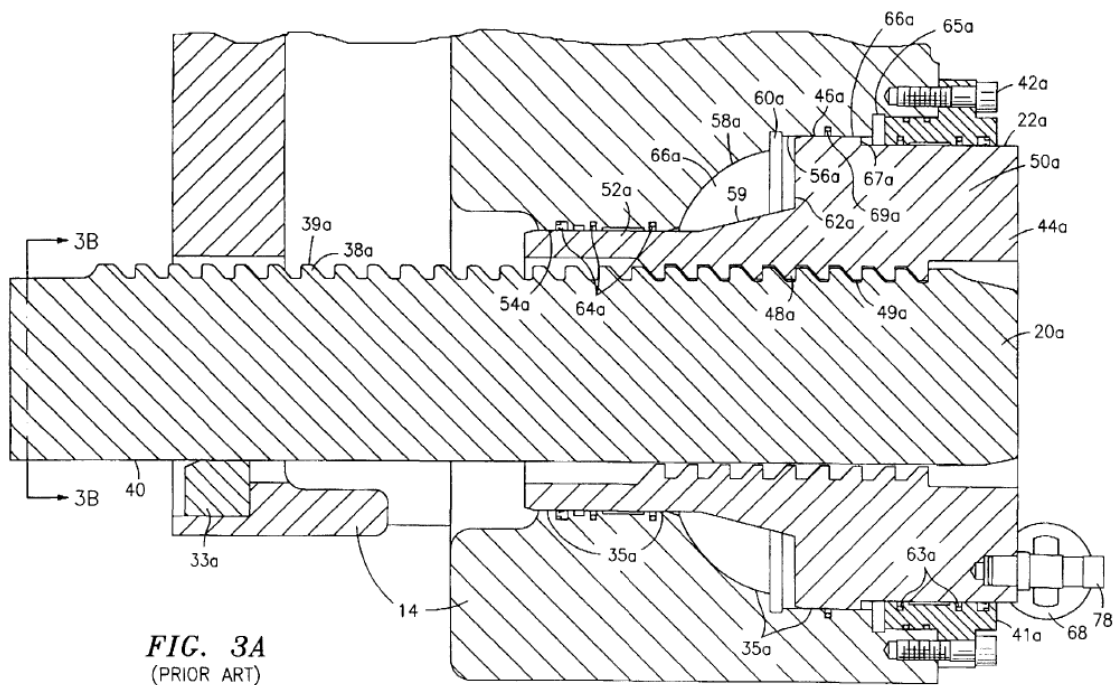


Figure 3A, above, is a cross-sectional view of the clamping assembly disclosed in Choi. Ex. 1003, 4:3–5. Tie bar 20a extends between the corners of movable platen 14 and a fixed platen 12 (not shown above). *Id.* at 4:63–67. Tie bar 20a includes an elongated end section with four strips 39 of teeth 38 on its outer surface. *Id.* at 5:42–53. Clamping assembly 22 includes piston 44 having an inner surface with four strips 49 of teeth 48, which are adapted to engage teeth 38. *Id.* at 5:59–6:12.

A portion of Figure 4 of Choi is reproduced below.

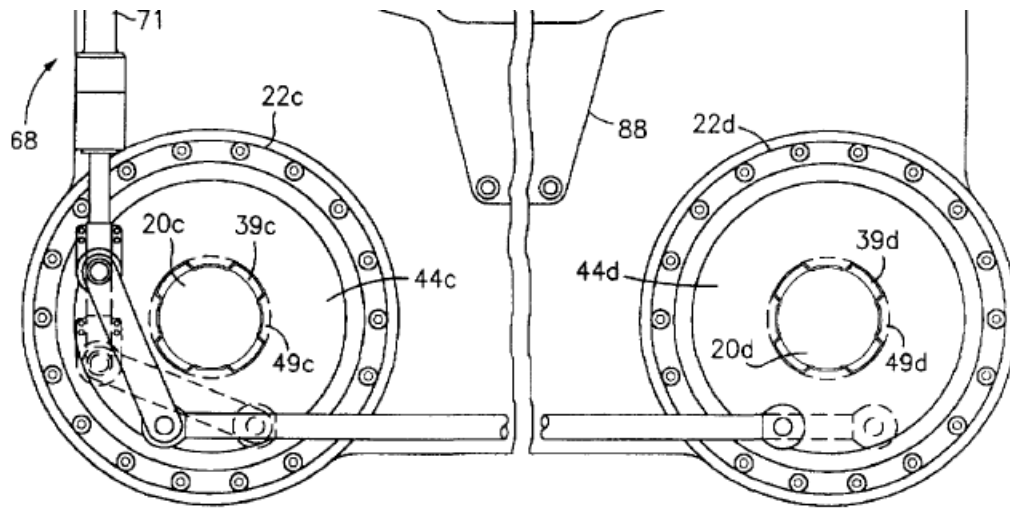


FIG. 4
(PRIOR ART)

The reproduced portion of Figure 4 of Choi, above, is the lower section of an end view of the injection molding machine showing the clamping assemblies and rotational mechanism. Ex. 1003, 4:6–9. The dotted lines in Figure 4 indicate movement of a rotational mechanism 68 that synchronously rotates the pistons 44 of the clamping assemblies 22 to bring strips 49 of teeth 48 into alignment with strips 39 of teeth 38 prior to the application of a clamping force on the platens 12 and 14. *Id.* at 7:53–8:9.

E. Incorporation by Reference

In remanding this case, the Federal Circuit explained that “Glaesener identifies with sufficient particularity what it incorporates from Choi.” *Husky*, 838 F.3d 1236, 1248–49. This is true even though “Choi does not recite either of the words ‘pineapple’ or ‘toothed-ring’” because “Choi explicitly identifies toothed components when discussing its securing/clamping assemblies, *i.e.*, its [only] locking mechanism.” *Id.* (citing Ex. 1002; Ex. 1003, 5:40–6:5, Fig. 3A). The Federal Circuit concludes that “Glaesener’s two paragraphs, ¶ 35 and ¶ 49,

accordingly work in concert to incorporate at least some portions of Choi.” *Id.* Ultimately, the Federal Circuit explains that Glaesener incorporates Choi “for purposes of anticipation” and it is “of no consequence” whether Glaesener incorporates the rest of Choi. *Id.* at 1249.

Patent Owner argues that the Federal Circuit held only that “the toothed components of the piston (44a) and tie bar (20a), shown in Figure 3A, and discussed at 5:40–6:5 is incorporated into Glaesener.” PO Remand Br. 6. According to Patent Owner, to find any more of Choi incorporated “would go beyond the Federal Circuit’s directive and analysis.” *Id.* Petitioner, on the other hand, argues that the Federal Circuit held that Glaesener incorporates “all portions of Choi that a skilled artisan would understand describe how to use the Choi Lock with a platen, in particular, the portions of Choi cited by Athena during trial.” Pet. Remand Br. 3.

We are not persuaded that, for purposes of this Decision, there is a meaningful difference between the positions of the two parties. To the extent that Patent Owner’s proposal strictly limits the portions of Choi incorporated by reference into Glaesener to those explicitly referred to in the Federal Circuit decision, we disagree. Instead, we agree with Petitioner’s reading of the Federal Circuit decision. Accordingly, we will rely, for our anticipation analysis below, on all portions of Choi that a skilled artisan would understand describe how to use the disclosed lock, as shown in Figure 3A, with a platen.⁵

F. Anticipation by Glaesener/Choi

Petitioner contends that Glaesener/Choi anticipates claims 2, 3, 17, and 19. Pet. 32–44. We have reviewed Petitioner’s explanation identifying where

⁵ For the rest of this Decision, the combination of Glaesener with these portions of Choi will be referred to as “Glaesener/Choi”

Glaesener/Choi describes each limitation of claims 1–3, 12, and 17–19 along with the proffered testimony of Petitioner’s declarant, Mr. Link. Pet. 32–40; Pet. Remand Br. 5–9; Ex. 1006 ¶¶ 23–30, 44–55. We have also reviewed Patent Owner’s argument and evidence that Petitioner’s contentions are deficient. PO Resp. 16, 17, 39–50 (Paper 24); PO Remand Br. 7–10.

1. Independent Claims 1, 12, and 18

The Petition alleges that each limitation of independent claims 1, 12, and 18 would have been understood to be disclosed by Glaesener/Choi. Pet. 32–39. In its Patent Owner Response, Patent Owner contends that Glaesener/Choi fails to describe the movable rod limitation and the relatively higher/lower flex zone limitations. PO Resp. 44–48. Each of Patent Owner’s arguments relating to limitations recited by the independent claims, however, rely on proposed claim constructions inconsistent with the constructions adopted in the Final Decision. *Id.* Patent Owner does not renew these arguments in post-remand briefing. PO Remand Br. 7–10.

We agree with, and adopt, Petitioner’s assertions that Glaesener/Choi discloses each of the limitations of independent claims 1, 12, and 18. In particular, we find that Glaesener/Choi discloses: (1) the lock of a molding system having tie bar 20 (a rod), and platen 50 (Ex. 1002, ¶ 50; Ex. 1003, 4:63–5:7, Figs. 1–6B); (2) securing/clamping assembly 22 that moves tie bar 20 from a clamped (stretched) position to a released position (Ex. 1003, 5:42–58, 6:57–62, 10:60–65, 11:16–25, 13:39–46, Fig. 3A; Ex. 1006 ¶¶ 28–30); and (3) teeth 48, which are associated with platen 50, and teeth 38 and 48 that are cooperatively operable to move between a lockable condition (the teeth are aligned) and an unlockable condition (the teeth are not aligned) (Ex. 1003, 6:65–7:4, 7:55–67, Fig. 6A, 6B; Ex. 1006 ¶¶ 28–30).

With respect to the relative flex zones of the platen, we are persuaded that Petitioner has shown, by a preponderance of the evidence, that Glaesener/Choi's platen 50 includes zones equivalent to those claimed and that Glaesener/Choi's teeth 38 and 48 are engagable within the relatively lower flex zone of platen 50. Pet. 32–35; Ex. 1006 ¶¶ 27, 44–55. In particular, we agree with Petitioner's assertion that Glaesener/Choi teaches that “the portions of the platen 50 adjacent each bore 14 that coincide with ribs 40 and gussets 42 experience a relatively lower flex than portions of the platen 50 that do not coincide with the ribs 40 and gussets 42 during clamping.” Pet. 25 (citing Ex. 1006 ¶ 27). Mr. Link corroborates this assertion, explaining that he supervised a 3D computer modeling and finite element analysis to predict the deformation of Glaesener's platen 50 using Choi's lock member. Ex. 1006 ¶¶ 44–55; *see* Pet. 33–35. According to Mr. Link, he regularly relies upon such analyses. Ex. 1006 ¶ 44. Moreover, Mr. Link describes, in some depth, the process followed, tools used, and assumptions made for the analysis. *Id.* at 45–55. We find Mr. Link's testimony, including his description of the finite element analysis and its results, credible. Patent Owner does not direct us to any evidence to the contrary. Thus, we determine that Petitioner has provided sufficient evidence to show that Glaesener/Choi necessarily discloses engagement within the relatively lower flex zone, as required by the claims.

Patent Owner argues, post-remand, that, “[i]n its Final Written Decision, the Board correctly found that ‘even when considered as one reference’ it was ‘not persuaded that Petitioner has met its burden to show that various portions of Choi and Glaesener, on which it relies, are combined in the same way as recited in the challenged claims.’” PO Remand Br. 10 (quoting Final Dec. 30–31). According to Patent Owner, nothing in the Board's decision on Petitioner's request for rehearing of the Final Decision or the Federal Circuit's opinion “require the Board

to reverse its prior analysis on this point.” *Id.* Thus, Patent Owner contends that Petitioner has still failed to show that Glaesener discloses its platen and Choi’s lock arranged as in claims 1, 12, and 18. *Id.*

Contrary to Patent Owner’s assertion, the Federal Circuit’s holding negates our determination, in the Final Decision, that Petitioner has not met its burden to show that “the various portions of Choi and Glaesener, on which it relies, are combined in the same way as recited in the challenged claims.” Final Dec. 31. The Final Decision explains that this determination was based on our understanding that (1) Petitioner “does not explain how the relied upon elements of Choi’s device secure the tie-bar nuts of Glaesener to rear wall 16 of Glaesener’s platen,” (2) Choi does not use the term “pineapple and toothed-ring mechanism,” and (3) “Petitioner does not provide persuasive evidence as to what part of Choi is included in the term ‘pineapple and toothed-ring mechanism.’” *Id.* at 30–31. The Federal Circuit, however, disagreed, holding that a reasonably skilled artisan would understand Glaesener’s use of the term “pineapple and toothed-ring” to refer to the locking mechanism described in Choi. *Husky*, 838 F.3d at 1249. Given this knowledge of the person of ordinary skill in the art, we determine Petitioner has provided sufficient evidence to show that Glaesener discloses its platen and Choi’s locking mechanism arranged in the same way as recited in claims 1, 12, and 18. *See* Pet. 32–39; Ex. 1006 ¶¶ 25–30, 44–55.

Accordingly, we are persuaded Petitioner has shown, by a preponderance of the evidence, that Glaesener/Choi anticipates independent claims 1, 12, and 18.

2. Dependent Claims 2, 3, 17, and 19

Dependent claims 3, 17, and 19 each add a limitation requiring that “movement of the rod to the released position by the clamp assembly creates a gap between the lock member and the complementary lock member” “to reduce wear therebetween when they move between” the lockable and unlockable conditions.

Ex. 1001, 16:33–37, 18:1–5, 18:18–22. Claim 2, similarly, requires “maintaining a gap between the lock member and the complementary lock member during movement of the lock between the lockable condition and the unlockable condition,” and also requires that “the rod is biased towards the released position.” Ex. 1001, 16:28–32.

In the Petition, Petitioner refers to claims 2, 3, 17, and 19 as the “Gap Claims” and alleges that each of their recited limitations would have been understood to be disclosed by Glaesener/Choi. Pet. 39–40. In its Patent Owner Response, Patent Owner contends that Glaesener/Choi fails to disclose “biasing” as recited by claim 2 and “movement of the rod . . . creates a gap . . . to reduce wear” as required by all of the Gap Claims. PO Resp. 49–50. Patent Owner reiterates these arguments in its post-remand briefing. PO Remand Br. 7–10.

With respect to claim 2’s biasing requirement, we agree with Petitioner that “Choi discloses that the tie bar 20 (i.e., the ‘rod’) is biased toward a released position when the cavity 65a is filled with fluid.” Pet. 39–40. Glaesener/Choi discloses that clamping pressure is released by (1) releasing hydraulic pressure from space 66a, thus removing the “clamping pressure against surface 62a of piston 44a,” and (2) “applying hydraulic fluid under pressure in cavity 65a against surface 67a of piston 44a,” thus maintaining engagement between pistons 44 and tie bar 20 and “power[ing] in the backward direction” the securing/clamping assemblies. Ex. 1003, 6:57–65, 14:26–37, Fig. 3A; Ex. 1006 ¶ 30.⁶ Glaesener

⁶ Patent Owner argues, in post-remand briefing, that “Petitioner improperly sought to bolster its position in reply, including citing to Choi at . . . 14:26–31.” PO Remand Br. 7. To the extent Patent Owner is arguing that we may not rely on this portion of Choi to support disclosure of biasing, we do not agree. Petitioner was properly responding to arguments made by Patent Owner in its response. Paper 31, 12; see PO Resp. 48–49. Moreover, at this stage of the proceeding, Patent Owner

/Choi, thus, discloses a tendency, caused by pressure on piston 44, to return to a released position—“biased towards the released position”—as recited in claim 2.

Patent Owner argues to the contrary, asserting that Glaesener/Choi’s short burst of hydraulic fluid does not show biasing as claimed because it is only used to “break the two mold halves apart at the end of a mold cycle” known as a “mold break.” PO Remand Br. 8. According to Patent Owner, Glaesener/Choi’s “mold break” “does not occur during the timeframe required by the claim (during movement of the lock from a lockable to unlockable condition).” Patent Owner asserts that the Gap Claims require “the gap to be maintained or created . . . after the molds have completely separated” and that Glaesener/Choi’s burst of hydraulic fluid “takes place after the mold has been injected.” *Id.* at 8–9. Patent Owner also argues that “mold break” activity is distinguished from biasing in the ’536 patent. PO Remand Br. at 8.

We do not agree that the recited “during movement of the lock between the lockable condition and the unlockable condition” is limited to the time “after the molds have completely separated.” The ’536 patent discloses that in both the “lockable” and “unlockable” conditions the mold portions can be in the gap closed position. See Ex. 1001, Fig. 5C (showing the “unlocked” condition with mold portions closed), Fig. 6C (showing the “lockable condition” with mold portions closed), 7:41–46, 12:32–55. Moreover, Figures 10A, B, and C, reproduced side-by-side below, with annotations as described above, depict clamp assembly 102 in a “post mold break condition.” *Id.* at 7:59–61.

has had ample time to respond to this argument, including in its post-remand briefing.

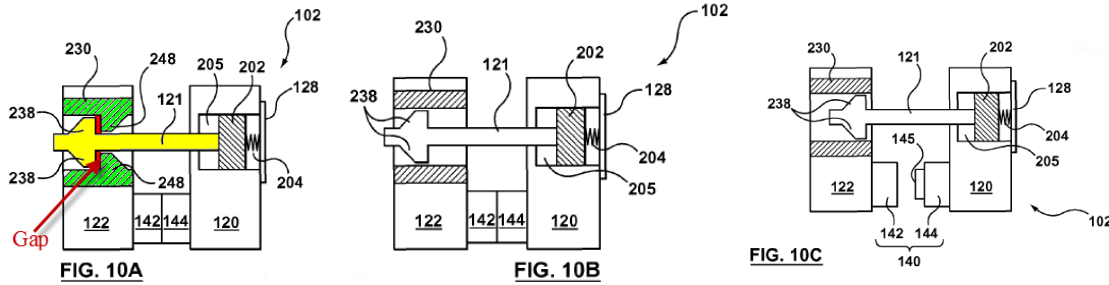


Fig. 10A shows the claimed locking mechanism in “lockable condition” where “mold break has occurred.” Ex. 1001, Fig. 10A, 15:18–25. At this point, the gap between the teeth is visible, but the mold portions are still closed. *Id.* Similarly, Fig. 10B shows the claimed locking mechanism in the “unlocked condition” with the mold portions still closed. *Id.* at Fig. 10B, 15:26–36. It is not until Figure 10C of the sequence that “clamp assembly 102 is placed in the mold opened position.” *Id.* at Fig. 10C, 15:37–41. This sequence of figures does not support Patent Owner’s assertion that the mold break activity is separate and independent from biasing.

Moreover, nothing in our construction of the term “biasing,” or in Patent Owner’s briefing regarding the construction of this term, suggests that it should exclude “mold break” activities. Patent Owner does not point to persuasive evidence supporting this purported difference between biasing and “mold break.” *Id.* at 7–10. Patent Owner’s unsupported attorney argument, on its own, is not persuasive. We, therefore, disagree that the ’536 patent’s disclosure requires a “mold break” process that is separate and independent from biasing.

With respect to the gap requirement recited by claims 2, 3, 17, and 19, we agree with Petitioner that Glaesener/Choi “discloses that movement of the tie bar 20 to the released position by the securing/clamping assembly 22 (i.e., the ‘clamp assembly’) creates a gap between the tie bar teeth 38 (i.e., the ‘lock member’) and the piston teeth 48 (i.e., the ‘complementary lock member’) to reduce wear

therebetween when the teeth 38, 48 move between a lockable condition and an unlockable condition.” Pet. 39–40. Glaesener/Choi discloses “[a] slight axial clearance is provided between the teeth 38a of tie bars 20a and the inner teeth 48a of toothed piston 44a to allow for relative movement and position error adjustment during engagement of the teeth.” Ex. 1003, 6:1–5; see Ex. 1003, 8:10–12, 13:44–46. Glaesener/Choi, thus discloses a gap between the lock member and the complementary lock member as recited in claims 2, 3, 17, and 19.

Patent Owner relies on the same “mold break” argument discussed above to argue that Glaesener/Choi does not disclose the gap limitations. PO Remand Br. 7–10. For the same reasons, we do not agree with Patent Owner’s narrow interpretation of Glaesener/Choi’s disclosure. Instead, we determine that Petitioner has provided sufficient evidence to show a gap between the lock member and the complementary lock member during movement of the lock between the lockable and unlockable conditions as claimed.

G. Conclusion

For the reasons expressed above, we determine that Petitioner has shown by a preponderance of the evidence that Glaesener/Choi anticipates claims 2, 3, 17, and 19 of the ’536 patent.

ORDER

Accordingly, it is

ORDERED that, as set forth in the Final Written Decision (Paper 45), claims 1, 4–16, and 20–22 are *unpatentable*;

FURTHER ORDERED that, contrary to the Final Written Decision (Paper 45), claims 2, 3, 17, and 19 of the ’536 patent are *unpatentable*;

FURTHER ORDERED that this is a final written decision under 35 U.S.C. § 318(a). Parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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