

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PACKERS PLUS ENERGY SERVICES INC.,
Petitioner,

v.

BAKER HUGHES OILFIELD OPERATIONS, LLC,
Patent Owner.

Case IPR2016-01003
Patent No. 8,261,761 B2

Before MITCHELL G. WEATHERLY, BEVERLY M. BUNTING, and
ROBERT L. KINDER, *Administrative Patent Judges*.

KINDER, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(A); 37 C.F.R. § 42.73

Packers Plus Energy Services Inc., (“Petitioner”) filed a Petition pursuant to 35 U.S.C. §§ 311–319 to institute an *inter partes* review of claims 1–20 of U.S. Patent No. 8,261,761 B2 (“the ’761 patent”). Paper 2 (“Pet.”). Baker Hughes Oilfield Operations, LLC (“Patent Owner”) did not file a Preliminary Response in this proceeding. Applying the standard set forth in 35 U.S.C. § 314(a), we instituted an *inter partes* review of all challenged claims. (Paper 10, “Dec.”).

During the trial, Patent Owner filed a Patent Owner Response (Paper 14, “PO Resp.”), and Petitioner filed a Reply to the Patent Owner Response (Paper 18, “Pet. Reply”). We authorized a Patent Owner sur-reply. Paper 23 (PO Sur-reply.).

An oral hearing was held on June 26, 2017, and a copy of the transcript has been made part of the record. Paper 28 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of the claims for which we instituted trial. Based on the record before us, we determine that Petitioner has not shown, by a preponderance of the evidence, that claims 1–20 of the ’761 patent are unpatentable.

I. BACKGROUND

A. *Real Party in Interest*

Petitioner names Packers Plus Energy Services Inc. as the real party in interest. Pet. 3. Patent Owner asserts that “[t]he real parties-in-interest in this proceeding are Baker Hughes Oilfield Operations, LLC; Baker Hughes, a GE Company, LLC; and Baker Hughes, a GE Company.” Paper 31, 1.

B. The '761 patent (Ex. 1001)

The '761 patent is titled “Selectively Movable Seat Arrangement and Method.” Ex. 1001, (12). The '761 patent generally relates to a plugging device that may be used “[i]n industries concerned with earth formation boreholes, such as hydrocarbon recovery and gas sequestration.” *Id.* at 1:6–9. In this industry, plugging is sometimes desirable at multiple locations and the plugging may be sequential or otherwise. *Id.* at 1:9–13. Plugging systems may employ droppable members, such as balls, that engage a ball seat to create a desired plug. *Id.* at 13–17. According to the '761 patent, it was known to use seats with sequentially smaller diameters at locations farther from the surface and to drop balls that have sequentially larger diameters. *Id.* at 1:19–26. Such a configuration allows the ball seat farthest from the surface to be plugged first by a ball with a smaller complementary diameter. *Id.* The '761 patent recognizes that such a system creates increasingly restrictive dimensions within the borehole that can negatively impact flow as well as limit the size of tools that can be run into the borehole. *Id.* at 1:27–32.

To address these identified problems, the '761 patent discloses two different embodiments, each of which provides a ball seat and zone-selective sealing capability, using uniformly sized balls and seat mechanisms. *Id.* (Figs. 1–4 first embodiment and Figs. 5–6 second embodiment). The embodiments disclosed in the '761 patent are designed to avoid the problematic restrictive dimensions inherent in the system, which uses different sized balls. *Id.* at 1:27–32. The restriction engaging system of the '761 patent allows a predetermined number of balls to pass through and, thus, travel downstream to the next restriction engaging system in line

before it forms a closed seat that catches the next ball dropped down the well bore. *Id.* at 3:54–61. The Specification of the ’761 patent refers to a “member” or “restriction engager,” which may be a ball, and also to a “seat arrangement or restriction,” which may be a ball seat. *Id.* at 1:36–40, 2:26–32. For example, as depicted in Petitioner’s annotated Figure 1 “restriction engagers 14 pass[] through restriction 18.” *Id.* at 2:45–47.

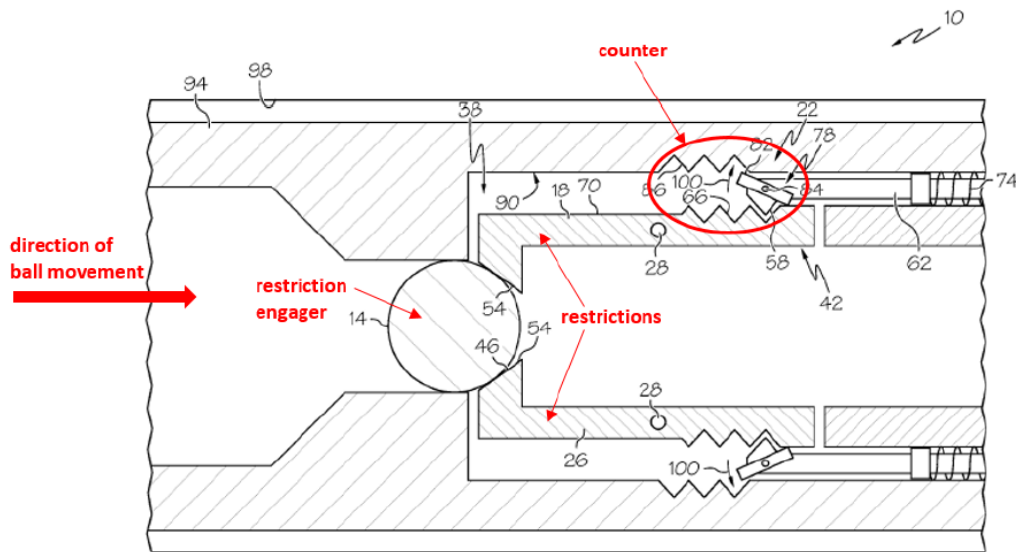


FIG. 1

Annotated Figure 1 represents a cross sectional view of a selectively movable seat arrangement in a resting position. Pet. 13.

Further, multiple restriction engaging systems can be installed at desired locations along the length of a well bore. *Ex. 1001*, 1:9–25.

The selectively movable seat arrangement depicted above also includes counter 22, which determines the number of iterations that pivot arms 26 can be forced open to allow restriction engager (ball) 14 to pass before they become locked in a closed position. Pressure behind ball 14 will cause pivot arms 26 to be forced open, thereby triggering a sequence of actions that cause counter 22 to index. *Id.* at 2:66–3:13. Specifically,

rotation of pivot arms 26 to an open position releases tooth 58 from opposing tooth 66 that has been holding it in place. *Id.* Upon release, lever 82, in turn, is forced (by biasing member 74, which is connected to the lever 82 via ram 62) in the direction opposite movement of ball 14 to engage the next adjacent opposing tooth 86. *Id.* at 3:14–3:27. After ball 14 passes the open restriction 18, pivot arms 26 return to the first pivot arm position, and tooth 58 is held in place by the next adjacent pivot arm tooth 66 to which tooth 58 was moved by biasing member 74. *Id.*

Counter 22 is indexed each time ball 14 is forced through a resting restriction 18. The number of times counter 22 can index before the restriction 18 becomes closed, such that subsequent balls 14 cannot be forced through with pressure, is a direct function of the number of opposing teeth pairs 66, 86. *Id.* at 3:39–41. Restriction engaging system 10 may reach a fully indexed state, as depicted in Figure 4, in which biasing member 74 forces ram 62 all the way until there is contact with stop 104. *Id.* at 3:39–49.

A second embodiment is depicted in Figures 5–7 of the '761 patent. Instead of using pivoting arms to cause the counter to index when a ball is forced through, a plurality of deformable arms 126 act in a similar manner. *Id.* at 4:3–9. Further, counter 122 uses a rotationally indexable sleeve 170 that rotates with each ball 114 passage and causes, upon completion of indexing, the arms 126 to move “longitudinally” (i.e., along the lengthwise direction of the well bore) from a position in which they can deform into annular recess 154, thereby facilitating passage of ball 114 (Fig. 5). *Id.* at 4:29–43. Arms 126 may eventually move to a position in which they are adjacent non-recessed portions 166 that block them from deforming (Fig. 6),

thereby preventing ball passage and facilitating formation of a seal between ball 114 and restriction 118. *Id.*

C. Illustrative Claim

Claims 1 and 14 are independent. Claim 1 is illustrative of the claims at issue:

1. A selectively movable seat arrangement comprising:

a plurality of seat members movable between a passable position where a member is passable therethrough and an impassable position where the member is prevented from passing therethrough; and

a counter in operable communication with the plurality of seat members, the counter capable of allowing movement of the plurality of seat members to the passable position to allow passage of a member a selected number of times and then to the impassable position thereby preventing passage of another such member for a period of time.

Ex. 1001, 5:42–53.

D. Related Proceedings

The parties state that the '761 patent is asserted in *Baker Hughes Oilfield Operations, Inc. v. Packers Plus Energy Services Inc.*, Case No. 4:16-cv-00019 (S.D. Tex.). Pet. 3; Paper 5, 1.

United States Patent No. 9,038,656 B2 (“the '656 patent”) is a divisional of the '761 patent. The '656 patent was challenged in IPR2016-01000 filed on May 5, 2016. Paper 5, 1.

E. Evidence Relied Upon

Petitioner relies on the following references:

U.S. Patent Publication No. 2009/0308588 A1, filed June 16, 2008, published December 17, 2009 (Ex. 1005, “Howell”);

U.S. Patent No. 4,113,012, filed October 27, 1977, issued September 12, 1978 (Ex. 1006, “Evans”);

Petitioner relies on the Declaration of George H. Medley, P.E. (Ex. 1003), and Patent Owner relies on the Declaration of Glen Stevick, Ph.D (Ex. 2101). The parties rely on other exhibits as discussed below.

F. Instituted Ground of Unpatentability

We instituted the instant trial based on the following grounds of unpatentability (Dec. 10, 21):

Reference(s)	Basis	Claims Challenged
Howell	§ 102(e)	1, 2, 7–15, and 17–20
Howell and Evans	§ 103(a)	3–8, 16, and 17

G. Claim Construction

The Board interprets claims of an unexpired patent using the broadest reasonable interpretation in light of the specification of the patent in which they appear. *See* 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard). Under the broadest reasonable interpretation standard, and absent any special definitions, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech. Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

Petitioner proposes constructions for four claim terms. Pet. 6–9. Patent Owner proposes constructions for two claim terms. PO Resp. 24–33.

For purposes of this Decision, having considered the evidence presented, we determine that only the claim term “counter” needs to be

addressed, and only to determine whether the term is subject to 35 U.S.C. § 112 ¶ 6 (pre-AIA). See *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy”).

“counter”

Claim 1 requires “a counter in operable communication with the plurality of seat members, the counter capable of allowing movement of the plurality of seat members to the passable position to allow passage of a member a selected number of times and then to the impassable position thereby preventing passage of another such member for a period of time.” Ex. 1001, 5:47–53 (hereafter “counter limitation”).

Patent Owner contends the counter limitation should be construed in means-plus-function format pursuant to 35 U.S.C. § 112 ¶ 6. PO Resp. 24–30. Patent Owner acknowledges that a presumption exists that the counter limitation is not in means-plus-function format, yet Patent Owner contends the counter limitation would not be understood by a person of ordinary skill in the art as reciting any definite structure. *Id.* at 26. Patent Owner’s contention is supported by the testimony of Dr. Stevick, who explains that “‘counter’ was not used in the hydrocarbon recovery industry prior to the invention date to refer to any definite type of structure or class of structures.” *Id.* According to Patent Owner, “there is no ‘definite structure’ denoted by the term ‘counter’; it is merely a function to be performed by any suitable structure,” and thus “‘counter’ is analogous to a ‘means for counting’ and should be subject to § 112, ¶ 6.” *Id.* at 27; PO Sur-reply 1–5.

Petitioner disagrees that the counter limitation should be construed in means-plus-function format. Pet. Reply 3–9. Petitioner contends that the

prior art of record “show[s] that a ‘counter’ conveys particular structure to [a] POSA.” *Id.* at 3. Petitioner argues that simply alleging that a counter is functional is not sufficient because a counter conveys a particular class of structures, specifically, “the term ‘counter’ conveys a particular class of structures that, just as the name implies, ‘count’ the number of balls that pass through the assembly, and either indexes and allows the ball to pass (i.e., keeps the restriction/ball seat open), or stops it (i.e., locks movement of the restriction/ball seat).” *Id.* at 4–5.

Based on the final trial record before us, we are not convinced that the counter limitation should be construed as a means-plus-function term. Because the term “means” is not used, there is a presumption that the counter limitation is not subject to § 112 ¶ 6, and this presumption has not been overcome. The presumption is overcome when “the claim term fails to ‘recite sufficiently definite structure’ or else recites ‘function without reciting sufficient structure for performing that function.’” *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015) (en banc) (quoting *Watts v. XL Sys., Inc.*, 232 F.3d 877, 880 (Fed. Cir. 2000)).

Claim 1 recites “a counter in operable communication with the plurality of seat members,” and claim 2 further requires that “the counter includes a plurality of indexable positions.” Ex. 1001, 5:47–48, 5:55–56. This claim language suggests that the counter is a definite structure that is in operable communication with another definite structure – the seat members. Further, claim 2 recites additional defined structure for the counter. Similarly, method claim 15 depends from claim 14 and further requires “indexing a counter each time the one of the one or more members passes the seat arrangement.” Ex. 1001, 6:44–46. The term “counter” as used in

claim 15 denotes a defined structure that is indexed but requires no other function. *See* Tr. 53:17–54:4 (“there isn’t a function for counter in claim 15”).

The Specification of the ’761 patent describes a system that “includes, a restriction engager, one or more restrictions, and at least one counter configured to permit or prevent passage of a restriction engager through one of the one or more restrictions.” *Id.* at 1:56–59. The counter is identified in one embodiment as counter 22 configured to index each time restriction engagers 14 pass through the restriction 18. *Id.* at 2:45–47 (describing the embodiment of Figures 1 and 2), *id.* at 4:1–2 (describing the embodiment of Figures 5 and 6). The Specification identifies the counter as a defined structure that is capable of performing certain functions as described in the Specification and also claimed. The Specification refers to counter 22 as a structural element that “counts” the number of balls that passes through the assembly and either indexes and allows the ball to pass or stops the ball. Further, upon cross examination, Dr. Stevick testified that “[c]ounters are often definite mechanisms, but it’s such a broad term, that without the specification and drawings, it doesn’t mean much.” Ex. 1020, 68:20–69:16.

Based on the use of the term “counter” in the Specification and claims, a person of ordinary skill in the art would understand the counter limitation to recite sufficiently definite structure. Based on the final trial record before us, at the time of filing of the ’761 patent, a person of ordinary skill in the art would understand that the term “counter” was meant to convey a sufficiently definite structure such that the presumption against reading “counter” as a means-plus-function element is un rebutted.

II. ANALYSIS

Petitioner bears the burden of proving unpatentability of the challenged claims, and the burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must establish the facts supporting its challenge by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

A. Level of Ordinary Skill in the Art

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citation omitted). In that regard, Petitioner’s expert, Mr. George H. Medley, testifies that

a person of ordinary skill in the art in this field (“POSITA”) at the relevant time frame would have had a combination of experience and education in the oil and gas industry. This typically would consist of a minimum of a bachelor of science in civil, mechanical, electrical or petroleum engineering and three to five years of professional experience in hydrocarbon recovery.

Ex. 1003 ¶ 14.

Dr. Stevick, Patent Owner’s expert, generally agrees with Mr. Medley that a POSITA would have combined experience in the oil and gas industry and three to five years of experience in hydrocarbon recovery. Ex. 2101 ¶ 20. *See also* PO Resp. 46. Dr. Stevick further testifies that as to tools, the POSITA would not have been skilled in tool design and engineering. PO

Resp. 54–55 (citing Ex. 2101 ¶¶ 75–76). Instead, the POSITA would have had “a basic functional understanding of how tools were intended to function, and would have specified such tools for inclusion in tool strings based on instructions from tool vendors rather than specifying specific structural characteristics of such tools.” Ex. 2101 ¶ 21.

Based on the evidence before us, we do not observe meaningful differences between the parties’ assessments of a person with ordinary skill in the art in terms of education and experience. Indeed, the parties’ disagreement centers on whether the POSITA would additionally have had more than a basic understanding of how the tools for downhole wellbore equipment are intended to function. PO Resp. 54–55; Pet. Reply 12–13. Given the high level of skill in the art, Patent Owner’s argument that such a POSITA would not have more than a basic understanding of tool function is not persuasive. PO Resp. 54–55. Therefore, we are more persuaded by Mr. Medley’s broader assessment of a person with ordinary skill in the art. As such, for purposes of this Decision, we determine that the POSITA would have (1) a bachelor of science in civil, mechanical, electrical, or petroleum engineering (2) three to five years of experience in hydrocarbon recovery in the oil and gas industry, including a familiarity with the function of downhole wellbore equipment. We note that our analysis would be the same under either proposed definition.

B. Anticipation by Howell

Petitioner contends that claims 1, 2, 7–15, and 17–20 are anticipated by Howell under 35 U.S.C. § 102(e). Pet. 5, 23. Based on the final trial

record before us, Petitioner has not proven by a preponderance of the evidence that the challenged claims would be anticipated by Howell.

As a threshold matter, we address Patent Owner’s argument that the disclosure of Howell is not enabling, and therefore does not anticipate the challenged claims. PO Resp. 53–56. To anticipate a claimed invention, a prior art reference must enable one of ordinary skill in the art to make the prior invention without undue experimentation. *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1354 (Fed. Cir. 2003). At the same time, the burden of persuasion in an *inter partes* review is on the petitioner to prove unpatentability by a preponderance of the evidence, and this burden does not shift to the Patent Owner. *Dynamic Drinkware, LLC*, 800 F.3d at 1378–80. This includes the burden of establishing that any reference upon which petitioner relies constitutes prior art under 35 U.S.C. § 102. 35 U.S.C. § 316(e); see *Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1576 (Fed. Cir. 1996) (holding that the challenger “bore the burden of persuasion . . . on all issues relating to the status of [the asserted reference] as prior art”). The distinct burden of production,¹ however, is a shifting burden, and the allocation of this burden depends upon where in the process of trial the issue arises. See *id.* at 1379 (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)). We begin our analysis with an overview of Howell.

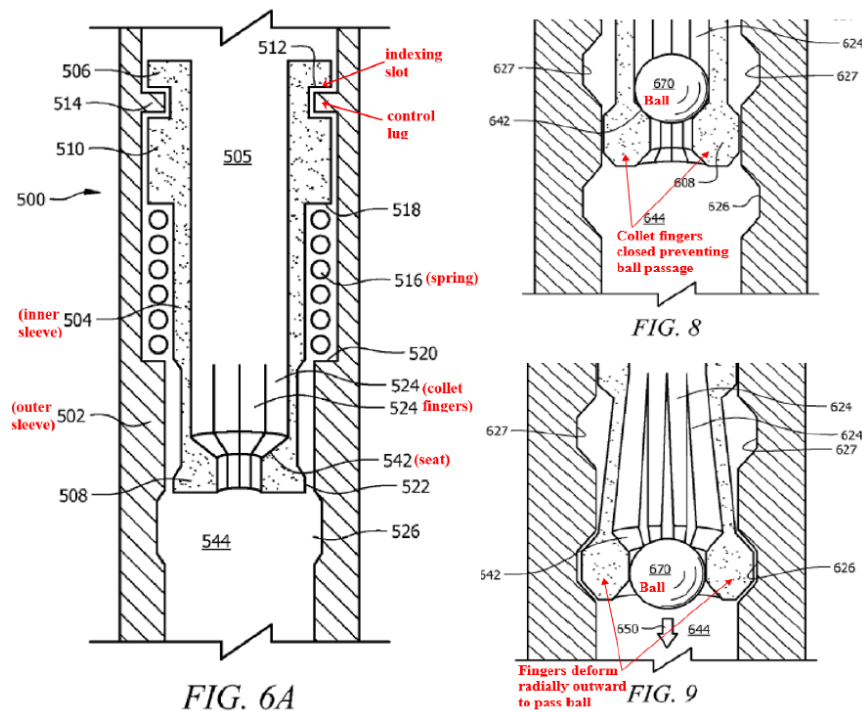
¹ The burden of production is also called the burden of going forward with evidence, which means both producing evidence and presenting persuasive argument based on the evidence. *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1327 (Fed. Cir. 2008).

1. Howell (Ex. 1005)

Howell relates to a “well bore servicing apparatus” designed to individually and selectively stimulate multiple “pay zones” — areas along the well bore that, when stimulated, cause natural gas or other desirable hydrocarbons to be released. Ex. 1005 ¶ 2. Howell discloses that having a tubing assembly with successively smaller diameter sleeves tends to restrict the inner diameter of the flow bore as well as the flow rates through the tubing string with the smaller diameter sleeves. *Id.* ¶ 5. Howell “includes embodiments for maintaining an increased or substantially uniform inner diameter of a treatment or completion assembly having stimulation sleeves, and for increasing the number of stimulation sleeves included in the treatment or completion assembly.” *Id.*

Howell addresses the problems using a combination of obturating members (balls), seats, and sliding sleeves to stimulate select regions. *Id.* ¶¶ 6, 7. Howell describes selectively passing a predetermined number of uniformly sized balls through a sleeve and an indexing assembly as well as the goal of catching a final ball after the predetermined number of balls have passed. *Id.* ¶¶ 45, 46, 51. The final ball allows the sleeve assembly to be actuated. *Id.* ¶ 45. Howell describes the use of “counter mechanisms to count the number of balls that pass through the assemblies.” *Id.* ¶¶ 50, 53.

Petitioner provides annotated Figures 6A, 8, and 9, reproduced below, which depict Howell’s “indexing assembly 500” including a ball seat 542 formed of collet fingers 524. Pet. 28–29



Annotated Figures 6A, 8, and 9 depict cross sectional views of an indexing assembly. Pet. 29.

Howell describes an indexing slot 512, which is formed as part of inner sleeve 504, and control lug 514, which is formed as part of outer sleeve 502. Pet. 28–29; Ex. 1005 ¶ 41. Counting occurs in response to relative movement between outer sleeve 502 and inner sleeve 504; for example, control lug 514 and indexing slot 512 are described in Howell as moving relative to each other to count the number of balls that pass through the indexing assembly 500 when pressure is applied to the topside of a seated ball. *Id.* ¶ 42.

Figures 6A and 8 represent a “stop” or “reset” position of the indexing assembly where collet fingers 524 are closed to form ball seat 642. *Id.* ¶ 43. When pressure is applied to the topside of seated ball 670, inner sleeve 504 moves downward relative to outer sleeve 502, thereby also moving collet fingers 608 down to a position where they are free to deform radially

outward into recess 626. *Id.* Figure 9 illustrates the position in which collet fingers 524 have been deformed radially outward, and ball 670 is allowed to pass through the assembly. *Id.* Howell refers to this state as a “release” position of the indexing assembly. *Id.*

Howell describes the counter being controlled by lug 514 as it is guided through a number of sets of stop and release positions within indexing slot 512. *Id.* These stop and release positions are depicted in Figure 6B of Howell. *Id.* ¶ 42.

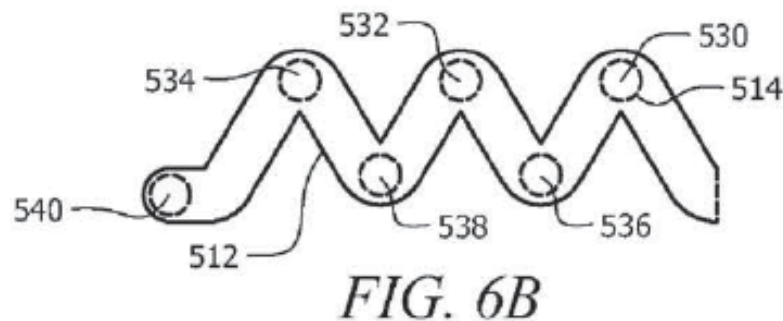
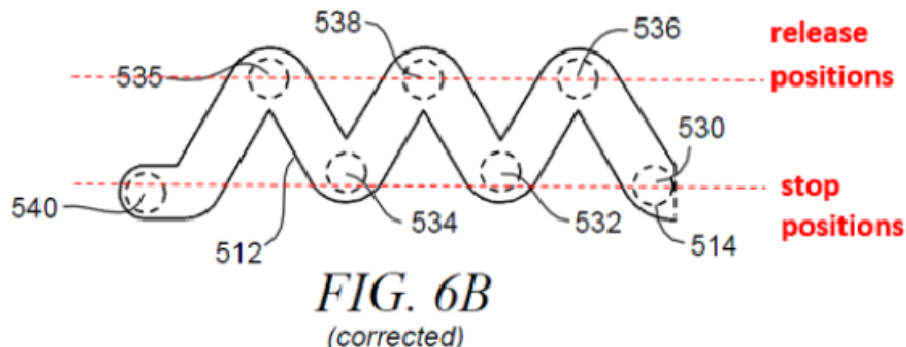


Figure 6B of Howell (Ex. 1005) represents “a profile view of an indexing slot of the indexing assembly of FIG. 6A.” *Id.* ¶ 19

Petitioner alleges that Figure 6B is drawn incorrectly and Petitioner proposes a “corrected Figure 6B” to take its place. Pet. 30–31.



“Corrected” Figure 6B of Howell was created by Petitioner and it shows a top line of “release positions” and a bottom line of “stop positions.”
Pet. 30–31.

Petitioner contends that Figure 6B as depicted in Howell is improperly drawn and, as explained by Petitioner's expert, "a POSITA would have readily recognized that the draftsman misplaced several of the reference numerals, confusing 'stop' positions with 'release' positions, and neglecting to draw an initial 'stop position' in the lower right corner of the slot."

Pet. 30 (citing Ex. 1003 ¶¶ 52, 53). Petitioner states, "[u]nfortunately, the draftsman who drafted the figures of the '761 patent made a few mistakes in Fig. 6B, as explained in the declaration of George Medley (Ex. 1003, Expert Dec. at 52, 53)." *Id.* Patent Owner agrees that Figure 6B of Howell is improperly drawn, but Patent Owner views these errors as part of a larger problem with Howell's ability to index and arrive at final stop position 540. *See* Tr. 38, 8–11 ("So, the error that's there is a labeling error. It's certainly symptomatic of a larger problem, in that Howell couldn't figure out how to make a slot that actually works."). We discuss the issues and the parties' arguments with respect to Figure 6B in more detail below.

Paragraph 42 of Howell also explains that "[t]he indexing slot 512 may also be referred to as a continuous J-slot or a control groove." Ex. 1005 ¶ 42. Referring to Figure 6B, Howell describes indexing slot 512 as including a plurality of reset or stop positions 530, 532, 534, as well as a plurality of release positions 536, 538 for lug 514 along the defined path. *Id.* Howell states that "slot 512 also includes a final engagement or actuation position 540." *Id.*; *see also id.* ¶ 44 ("The lug 514 is guided through any number of sets of stop and release positions until the lug 514 reaches the final position 540."). Apart from these descriptions, Howell offers no further explanation as to how lug 514 would reach final stop position 540.

2. Analysis of Howell Enablement

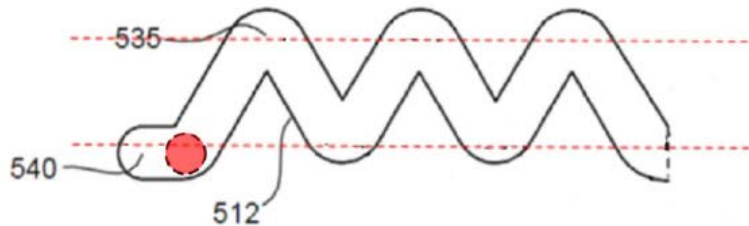
Given that the cited prior art has a presumption of enablement, we recognize that the burden of rebutting enablement of a reference rests on Patent Owner. *See, e.g., In re Antor Media Corp.*, 689 F.3d 1282, 1289 (Fed. Cir. 2012) (“[D]uring patent prosecution, an examiner is entitled to reject claims as anticipated by a prior art publication or patent without conducting an inquiry into whether or not that prior art reference is enabling” and thereafter “the burden shifts to the applicant to submit rebuttal evidence of nonenablement.”). In the present proceeding, Patent Owner first raised the question of enablement of Howell in its Patent Owner Response. *See generally* PO Resp. 53–56. In turn, Petitioner disputed Patent Owner’s contentions in its Reply. *See generally* Pet. Reply 10–19. We granted Patent Owner the opportunity to file a Sur-reply, which it did. *See generally* PO Sur-reply 5–7. Thus, we apply the underlying principle from *Dynamic Drinkware* here: although the burden of persuasion to prove unpatentability always rests with petitioner, the burden of production for showing that a patent claim is unpatentable may shift between the parties. *See Tech. Licensing*, 545 F.3d at 1327–29 (explaining that the accused infringer/defendant, having the ultimate burden of proving its defense of invalidity, had the burden of going forward with evidence that there is anticipating prior art, and once the accused infringer met that burden, the burden shifted to the patent owner to go forward with evidence that asserted claim is entitled to an earlier filing date); *id.* at 1327 (“This requires [patent owner] to show not only the existence of the earlier application, but why the written description in the earlier application supports the claim.”).

Based on the record before us, when viewed in light of *Dynamic Drinkware*, we find that Petitioner met its initial burden of production by relying on Howell and the supporting declaration of Mr. Medley, to support its argument that Howell discloses each of the limitations of the challenged claims. See generally Pet. 22–50. Indeed, our Decision on Institution confirms that Petitioner met its initial burden of production. Dec. 9–14. Because Petitioner offered Howell into evidence as prior art, and patent publications are presumed to be enabled,² the burden of production then shifted to Patent Owner to come forward with evidence to demonstrate that the disclosure of Howell is not enabling — which it did in its Patent Owner Response.

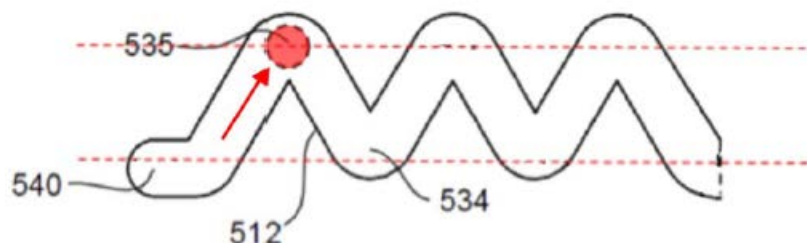
We next consider the sufficiency of Patent Owner’s arguments and evidence that Howell is not enabled. Specifically, Patent Owner argues that Howell’s structure would not perform the functions recited in claim 1, including: (1) “prevent[ing] a ball from passing because it has no way of causing lug 514 to engage indexing slot 512 in final stop position 540” and (2) “count[ing] a ‘selected number’ of balls before preventing another ball from passing.” *Id.* at 53. Patent Owner details how the existing design of Howell could not accomplish these two functions. PO Resp. 35–41, 53–55. Patent Owner, supported by the testimony of Dr. Stevick, contends that Howell’s indexing assembly is incapable of preventing a ball from passing because lug 514 will never arrive at and maintain position 540. *Id.* at 35 (citing Ex. 2101 ¶¶ 64, 73–74). As explained and depicted by Patent Owner:

² See *In re Antor Media Corp.*, 689 F.3d 1282, 1287–88 (Fed. Cir. 2012); *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1355 (Fed. Cir. 2003).

As shown in the diagram below, if the lug were able to progress to release position 535 and travel toward stop position 540, it would encounter a horizontal segment before it could arrive at stop position 540. *Id.* at ¶73. From that position, it would require a purely rotational motion of the sleeve for lug 514 to proceed to stop position 540. *Id.*



However, Howell describes no mechanism by which this motion could happen. *Id.* at ¶¶69, 73. The only way that Howell describes to achieve rotational motion of the sleeve is for lug 514 to engage the angled walls of slot 512. *Id.* This translates the linear, longitudinal forces imparted by the ball and spring into rotational motion. *Id.* at ¶¶61-62, 69, 73. However, when the lug engages the horizontal surface to the right of position 540, the longitudinal force can no longer cause rotational motion. *Id.* at ¶73. Angular momentum would *not* be adequate to cause lug 514 to move to position 540, because the masses and speeds in the downhole environment would not generate enough momentum to cause continued rotation after linear forces cease (and can no longer cause rotation). *Id.* at ¶67. Thus, absent any other motive force for rotational motion—and Howell describes none—there is no way that the Howell indexing assembly as described can arrive at a position in which a ball is prevented from passing. *Id.* at ¶73. Upon engagement of the next ball, the lug would simply move back to release position 535, as depicted in the diagram below. *Id.* at ¶74.



Based on its view of Howell, Patent Owner also argues that redesign of Howell's tool to function as intended³ "would at the very least have required undue experimentation." *Id.* at 55 (citing Ex. 2101⁴ ¶¶ 75, 76). For example, Patent Owner notes that angling the horizontal segment adjacent final stop position 540 of the indexing slot to provide rotational movement would conflict with "Howell's need to prevent further vertical movement of its inner sleeve." *Id.* (citing Ex. 1005 ¶ 44; Ex. 2101 ¶ 75). Patent Owner's expert opines that "[a]ngling that horizontal leg would necessarily permit the vertical movement—and backsliding—that Howell sought to preclude." *Id.* (citing Ex. 2101 at ¶ 75). Patent Owner notes that during cross-examination, Petitioner's expert, Mr. Medley, could not "articulate what aspects of Howell's structure would cause its inner sleeve to rotate (*id.* at 56 (citing Ex. 2103, 124:14 - 126:19; Ex. 2101 ¶ 76)); nor how Howell's indexing slot could be modified to function as intended (*id.* (citing Ex. 2003, 128:17–129:7)).

In light of the arguments and evidence cited above, and as discussed below in response to Petitioner's arguments, we find that Patent Owner has rebutted the presumption that Howell is enabling. Accordingly, the burden of production *shifts back to Petitioner* to establish by a preponderance of the evidence that the disclosure of Howell with respect to the challenged claims is enabling. *See Dynamic Drinkware*, 800 F.3d at 1380. In *Dynamic Drinkware* our reviewing court instructs:

³ We note that Petitioner has not proposed any specific redesign to Howell that would enable the indexing mechanism to function as intended.

⁴ Patent Owner's citations to Ex. 2001 are understood to mean Ex. 2101 — Dr. Stevick's Declaration.

In an *inter partes* review, the burden of persuasion is on the petitioner to prove “unpatentability by a preponderance of the evidence,” 35 U.S.C. § 316(e), and that burden never shifts to the patentee. Failure to prove the matter as required by the applicable standard means that the party with the burden of persuasion loses on that point—thus, if the fact trier of the issue is left uncertain, the party with the burden loses.

800 F3d at 1378–79 (internal citations omitted). We, therefore, turn to Petitioner’s evidence and arguments that Howell is enabled. See Pet. Reply 10–19.

In its Reply, Petitioner counters that Howell is enabled, and that “it is Patent Owner’s burden to demonstrate non-enablement, and neither Patent Owner nor its expert even acknowledge the pertinent factors set forth in *In re Wands* to then attempt to show that POSA would need to engage in undue experimentation to practice Howell’s invention.” Pet. Reply 10–11 (citing *In re Wands* 858 F.2d 731, 737 (Fed. Cir. 1988)). Petitioner maintains that “when the *Wands* factors are considered, they confirm Howell’s anticipating disclosure.”⁵ Pet. 11.

Bearing in mind that the burden of production has shifted to Petitioner to refute Patent Owner’s arguments and evidence that Howell is not enabled, we consider Petitioner’s arguments and evidence. We first consider Petitioner’s general contention that Patent Owner’s enablement position should fail because Patent Owner does not expressly cite *In re Wands* or

⁵ The *Wands* factors include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. *In re Wands* 858 F.2d at 737.

Patent Owner does not present the enablement arguments in a coherent fashion. See Pet. Reply 10–11 (“neither Patent Owner nor its expert even acknowledge the pertinent factors set forth in *In re Wands*”); Tr. 7:11–8:3 (Petitioner contends that Patent Owner’s enablement analysis is deficient “[b]ecause they don’t present the analysis in -- in any kind of coherent fashion.”). We find Petitioner’s contentions unpersuasive because a significant portion of Patent Owner’s briefing is directed to the *Wands* factors, even though Patent Owner does not specifically provide a citation to the case itself. Considering the whole of Patent Owner’s analysis, each of the *Wands* factors is addressed in some manner as we further explain below.

For example, Patent Owner’s contentions first focus on establishing that Howell would not work as intended. PO Resp. 35–41. Patent Owner explains that based on the amount of direction presented, Howell’s disclosed embodiments are not capable of functioning as intended and are thus not working examples. *Id.* at 35, 53–54 (“Howell’s structure would not be able to perform the functions recited in independent claims 1 and 14 of the ’761 Patent”). As for the predictability of the art, and undue experimentation, Patent Owner offers Dr. Stevick’s testimony that the modifications necessary in Howell to achieve the intended function were not predictable and would require undue experimentation. See Ex. 2101 ¶¶ 20–23, 75–77. Patent Owner also provides the deposition testimony of Petitioner’s expert, Mr. Medley, to support its position that “a POSITA in 2008 would not have been able to modify Howell’s structure to function as required by the claims,” thus addressing the quantity of experimentation necessary for Howell to operate as intended. PO Resp. 56 (citing Ex. 2103, 124:14–126:19; Ex. 2101 ¶ 76). Patent Owner contends that “despite studying

Howell in enough detail to recognize that its Fig. 6B needed correction (see Ex. 1003 at ¶¶50-52), Mr. Medley did not even recognize that Howell's structure would not function to 'count' balls." PO Resp. 56 (citing Ex. 2003 at 114:11-18).

Patent Owner's analysis addresses the breadth of the claims and in particular "Howell must enable a counter 'capable of allowing movement of the plurality of seat members to the passable position to allow passage of a member a selected number of times and then to the impassable position thereby preventing passage of another such member for a period of time.'" PO Sur-reply 5. Although we do not fully agree with Patent Owner's assessment of the relative skill of those in the art, Patent Owner provides a detailed analysis of this hypothetical person and how the skill level would impact the enablement analysis. PO Resp. 54-55. As such, failing to name *In re Wands*, and address the factors in order, does not negate Patent Owner's detailed analysis, which considers the *Wands* factors.

Next, with respect to the state of the art and predictability of the art, we consider Petitioner's argument that "the prior art is replete with examples of indexing mechanisms and J-slots that POSA would have been familiar with and would have referred to, if needed at all, to make and use Howell's invention." Pet. Reply 11-12 (citing Ex. 1012; Ex. 1014, 1:46-65; Ex. 1016, 1:18-30, 5:27-33; Ex. 1018, 3:11-17; Ex. 1020, 26:2-27:7, 57:2-59:4). Along this vein, Petitioner also asserts that the evidence it cites, namely Exhibits 1012, 1014, 1016, 1018, and 1020, "show that POSA would have been able to predictably implement a slotted, indexing mechanism, but it also shows that the art was laden with numerous patents and other printed publications providing POSA with guidance on making and using the same."

Id. at 12. As to the level of skill in the art,⁶ Petitioner asserts that slotted mechanisms are ubiquitous, and that the “POSA surely would not be confused about how to design the pertinent tool.” *Id.* at 12–13.

The only evidence Petitioner produces to refute the testimony of Patent Owner’s expert, Dr. Stevick, regarding operation of the indexing mechanism disclosed by Howell are Exhibits 1012, 1014, 1016, and 1018. Moreover, Petitioner’s conclusory attorney arguments fail to provide a detailed explanation of the significance of the evidence relied on. *See* 37 C.F.R. § 42.104(b)(5). As such, we give little weight to Petitioner’s unsupported attorney arguments in this regard.

Both parties seemingly agree (Pet. 41–42, PO Resp. 33) that the following passage from Howell describes an indexing mechanism with an intended goal of achieving a final engagement or actuation position.

The indexing slot 512 may also be referred to as a continuous J-slot or a control groove. The indexing slot 512 includes a plurality of biased, reset or stop positions 530, 532, 534 and a plurality of release positions 536, 538 for the lug 514. The slot 512 also includes a final engagement or actuation position 540.

Ex. 1005 ¶ 42.

The parties’ dispute centers on whether the indexing mechanism shown in Figure 6B would be capable of achieving the intended goal. Petitioner argues that Patent Owner’s “hyper-technical analysis” does not prove non-enablement of Howell and that the Figures in Howell cannot be relied on for what they show because they are not drawn to scale. Pet. Reply

⁶ As discussed above, we adopted Petitioner’s definition of one of skill in the art.

13–15. Petitioner supports its argument by recapping Patent Owner’s arguments and concluding that Patent Owner and Dr. Stevick improperly based their enablement argument “on specific angles, gaps, and pin sizes that are nowhere described in Howell.” *Id.* at 15 (citing Ex. 1005 ¶ 25; Ex. 1020, 41:17–42:12). Petitioner does not differentiate what aspects of the drawings, and in particular Figure 6B, can be relied upon despite Petitioner’s own repeated reliance on Figure 6B to establish anticipation. *See* Pet. 31, 36, 40, 41, 43. Without more, Petitioner’s attorney argument in this regard does not inform us how Patent Owner’s arguments and evidence are incorrect.

Petitioner additionally argues that Patent Owner’s analysis of Figure 6B is erroneous because “it does not account for the figures ‘unwrapped or [flattened] profile view’ that would eliminate the angled surfaces Dr. Stevick relies upon,” and also ignores Howell’s disclosure of biased stop positions and different pin shapes. Pet. Reply 15 (citing Ex. 1005 ¶ 42). Petitioner directs our attention to the cross-examination testimony of Dr. Stevick, in which “Dr. Stevick agreed that the flattened profile view will not show all dimensions or any depth-wise angle or curvature existing in Howell’s indexing slot” (*id.* (citing Ex. 1020, 39:13 – 40:19)), as well as the above cited passage from Howell (*id.* (citing Ex. 1005 ¶ 42)). Nonetheless, other than asserting that Dr. Stevick’s interpretation of Figure 6B is inaccurate, Petitioner does not provide rebuttal evidence demonstrating that one of skill in the art would disagree with Dr. Stevick’s testimony regarding Figure 6B. *See* Pet. Reply. 13–18.

Petitioner further argues that Dr. Stevick’s analysis “fails to consider Howell’s description of the indexing slot 512 being a ‘continuous J-slot’” (Pet. Reply 17 (citing Ex. 1020, 29:17–30:3)), despite the disclosure in

Howell that “counting can be achieved with a J-slot” (*id.* (citing Ex. 1005 ¶ 27)). Petitioner’s argument that Exhibit 1020 illustrates a J-slot is not persuasive because Petitioner does not provide credible evidence to support a finding that one of skill in the art would utilize the exemplary J-slot from Exhibit 1020 in the indexing mechanism of Figure 6B of Howell. More specifically, Petitioner’s arguments and evidence do not establish persuasively how the J-slot of any exhibit it cites as evidence could be used to achieve a final stop position as claimed.

Moreover, even if we were to ignore Figure 6B and just consider whether the disclosure in Howell of utilizing a “continuous J-slot” is enabling (Ex. 1005 ¶ 42) — Petitioner has not proffered sufficient arguments and credible evidence to support a finding that a continuous J-slot will necessarily achieve the claimed function of preventing passage of an additional one of the restriction engagers after a selected number of the restriction engagers have passed. Indeed, continuous J-slots are that — they are continuous and Petitioner has not shown how they reach a final stop position, and certainly not a final stop position as claimed. As one example, European Publication No. 0427422 B1, cited by the ’761 patent (Ex. 1001, (56)), depicts endless (continuous) J-slot 182:

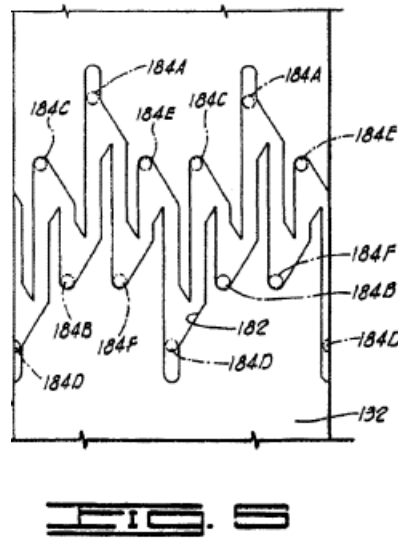


Figure 5 of European Publication No. 0427422 B1.
Ex. 1002, 215:22–45, 234.

Thus, Petitioner has not established how Howell’s disclosure of J-slots and continuous J-slots enable the claim requirement of achieving a final stop position. Further, to extent any modifications could be made to Howell or to any of the additional J-slot’s cited to achieve a final position as claimed without undue experimentation, these modifications have not been offered by Petitioner in the final trial record before us.

As to Patent Owner’s argument that Figure 6B is non-enabling because a purely rotational force is required for the lug to reach the final rest position 540, Petitioner argues that as shown in Figure 2 of Ex. 1018, “rotational movement, or a combination of rotational and up/down movement is the precise motion generated by a J-slot as explicitly defined in the art.” Pet. Reply 18. This argument is likewise unpersuasive because other than attorney argument, Petitioner does not proffer credible evidence to support a finding that one of skill in the art would equate the movement generated by the J-slot in Figure 2 of Exhibit 1018 with the movement of the lug in the indexing mechanism shown in Figure 6B of Howell, which as

Petitioner acknowledges, is not even a J-slot. *See* Tr. 20:18–21 (“JUDGE BUNTING: And is the slot in figure 6B, is that -- would that be considered by one of skill in the art a J-slot? MR. MCKEOWN: No, it would not, your Honor.”).

3. Summary

Considering the record as a whole, we find that Patent Owner has provided persuasive arguments and evidence demonstrating that the disclosure in Howell cited by Petitioner does not enable any of the claims of the '761 patent. In response, Petitioner has not produced sufficient evidence to convince us otherwise. As such, the record shows sufficient evidence to overcome the presumption of enablement. We therefore conclude that Petitioner has not proven by a preponderance of the evidence that the challenged claims would be anticipated by Howell.

C. Obviousness Ground Based on Howell and Evans

Petitioner contends that claims 3–8, 16, and 17 are unpatentable over Howell and Evans under 35 U.S.C. § 103(a), relying on the supporting testimony of Mr. Medley (Ex. 1003). Pet. 50–62. Based on the final trial record before us, we are not persuaded that Petitioner has established by a preponderance of the evidence that claims 3–8, 16, and 17 are unpatentable over Howell and Evans for the reasons explained below.

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406

(2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

We first provide an overview of Evans below, and then address the basis and reasons for our decision.

1. Evans (Ex. 1006)

Evans discloses a circulation valve for use in the testing of an oil well where the valve may be reclosed by application of well annulus pressure. Ex. 1006, Abstract. As depicted in Figure 1 of Evans, a test string is inserted into well bore 6 and the test string includes tester valve 25, which controls the flow of formation fluid from well bore 6 into the interior of the test string. Ex. 1006, 4:19–52. Evans also discloses pressure recording device 26 to record the pressure of formation fluid samples, and tailpipe 28, into which the formation fluid flows when an interior valve in tester 25 is opened. *Id.* Further, annulus 16 — i.e., the annular region between the test string and the well bore’s walls — is filled with well fluid, otherwise known as “mud,” in order to maintain the correct hydrostatic pressure. *Id.* at 4:19–52. Testing is performed by a series of openings and closings of a valve in tester 25, which when open, allows the formation fluid to flow from well bore 6, in through tailpipe 28, and into pressure recorder 26. *Id.* at 4:43–46. Tester 25 is opened and closed by pressure applications in the well annulus, each successive pressure application in the well annulus 16 will open tester 25 and move circulation valve 22 an incremental step toward opening. *Id.*

Evans' circulation valve 22 functions through use of an indexing collar formed of opposing pairs of teeth that increment with each pressure application to the well annulus 16 in the same manner that caused the tester valve to open and close. *See, e.g., id.* at 3:53–59, 4:43–46, 6:7–29. When the circulation valve counter counts a predetermined number of pressure applications (corresponding to the number of test samples taken), the counter mechanism causes two ports to become aligned (circulation port 42 and port 57 in Fig. 2a) opening circulation valve section 200 to achieve fluid communication between the well annulus and the test string interior. *Id.* at 10:30–42.

Evans' Figure 3, below, depicts the “indexing collar 74,” which Evans describes as “count[ing] the longitudinal movements caused by the well annulus pressure changes, and is arranged for activating the [circulation] valve operating mechanism to open the oil well valve after a predetermined number of longitudinal movements.” *Id.* at 2:15–20.

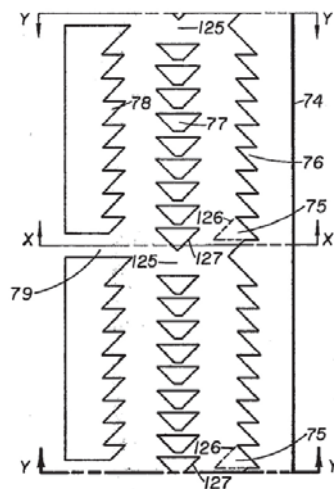


FIG. 3

Evans' Figure 3 illustrates the interior of an indexing collar with indexing teeth. *Id.* at 2:66–68.

Indexing collar 74 is formed of three sets of teeth: upper teeth 78, middle teeth 77, and lower teeth 76. *Id.* at 8:8–30. Each time sufficient pressure is applied to the mud in the annulus, lug 75 moves between pairs of opposing teeth — that is, either between lower teeth 76 and middle teeth 77 or between upper teeth 78 and middle teeth 77. *Id.* at 10:4–39. While lug 75 is traveling between lower teeth 76 and middle teeth 77, the circulation valve 42 remains closed. *Id.* at 8:46–49. When lug 75 reaches and passes through one of slots 125, thereby transitioning from traveling from between the lower and middle teeth to traveling between the upper and middle teeth, circulation valve 42 opens, and remains open for as long as lug 75 remains engaged with upper teeth 78. Circulation valve 42 then closes when lug 75 reaches the next slot 125 and moves down to resume traveling between lower teeth 76 and middle teeth 77. *Id.* at 8:37–49.

2. Obviousness of Claims 3–8, 16, and 17 over Howell and Evans

In this proceeding, Petitioner has not directly challenged claims 1 and 14 of the '761 patent as obvious based on Howell or a combination of Howell and Evans. *See* Pet. 5, 23, 50. Instead, Petitioner relies upon its anticipation analysis of Howell for claims 1 and 14 to provide support for the obviousness analysis of claims 3–8, 16, and 17 based on Howell and Evans. *Id.* at 57. Regarding claims 1 and 14, Petitioner states that “Howell teaches every feature of the independent claims from which these claims depend but arguably does not disclose using a tooth-based counter as required by these claims. Evans cures that deficiency.” *Id.* For the reasons set forth below, and based on the final trial record before us, Petitioner has

not established by a preponderance of the evidence that claims 3–8, 16, and 17 are unpatentable under 35 U.S.C. § 103 over Howell and Evans.

Petitioner does not offer independent analysis explaining how claims 1 and 14 are obvious in light of the combination of Howell and Evans. Likewise, we have not provided Patent Owner with any indication that we would consider independently the obviousness of claims 1 and 14 over the combination of Howell and Evans. The trial instituted in this proceeding is limited to whether claims 1 and 14 are unpatentable pursuant to 35 U.S.C. § 102. Dec. 21. Petitioner did not request, and we did not order, a trial of claims 1 and 14 pursuant to Section 103.

As noted above, Petitioner has not established that claims 1 and 14 are anticipated by Howell. For us to determine whether claims 3–8, 16, and 17 are obvious over Howell and Evans, we first have to determine that claims 1 and 14 are obvious over Howell and Evans. Even though Petitioner did not challenge claims 1 and 14 under § 103, Petitioner did challenge claims depending therefrom as obvious over Howell and Evans. Therefore, we need also consider whether the Petition provides a sufficient obviousness analysis for claims 1 and 14 such that we could concurrently determine whether dependent claims 3–8, 16, and 17 would be unpatentable over Howell and Evans. For the reasons set forth herein, Petitioner has not proffered sufficient arguments and credible evidence to support a finding that claims 1 and 14, and thus claims 3–8, 16, and 17, are obvious over the combination of Howell and Evans. We base our decision on two independent reasons — (1) Petitioner has not addressed how claims 1 and 14 would be obvious over the combination of Howell and Evans, and (2) Petitioner has failed to prove by a preponderance of the evidence that

Howell and Evans teach “the counter capable of allowing movement of the plurality of seat members to the passable position to allow passage of a member a selected number of times and then to the impassable position thereby preventing passage of another such member.” Ex. 1001, 5:42–53, 6:34–43 (claim 14 requires similarly “preventing the additional member from passing the seat arrangement”).

First, at this stage of the proceeding, it would be improper for us to convert Petitioner’s existing anticipation analysis of claims 1 and 14 based solely on Howell to an obviousness analysis based on the combination of Howell and Evans. We have not informed Patent Owner that such an alternative theory would be considered. Patent Owner has not been given an opportunity to address whether claims 1 and 14 are unpatentable as obvious based on the combination of Howell and Evans. Petitioner has challenged dependent claims 3–8, 16, and 17 as obvious, but Petitioner has not given Patent Owner notice that claims 1 and 14 would be considered independently under an obviousness ground based on Howell and Evans. Petitioner must “[p]rovide a statement of the precise relief requested for each claim challenged,” including “[t]he specific statutory grounds under 35 U.S.C. 102 or 103 on which the challenge to the claim is based and the patents or printed publications relied upon for each ground.” 37 C.F.R. § 42.104(b). Petitioner must also explain “[h]ow the construed claim is unpatentable under the statutory grounds identified,” and “specify where each element of the claim is found in the prior art patents or printed publications relied upon.” *Id.* In this proceeding, Petitioner only challenges claims 1 and 14 pursuant to Section 102, and then makes a conclusory statement that Howell teaches the elements of these independent claims

(Pet. 57), but Petitioner does not assert that claims 1 and 14 are unpatentable as obvious based on the combination of Howell and Evans.

To reach a determination that claims 1 and 14 are obvious over Howell and Evans would require us to adopt arguments on behalf of Petitioner that could have been, but were not, raised by Petitioner during this proceeding. Our reviewing court has cautioned:

In the final paragraph of the opinion, we addressed the Director’s broad contention that the Board was free to make an argument for the petitioner simply because the argument “could have been included in a properly-drafted petition.” *Id.* at 1377, 1380 (quoting Intervenor’s Br. 34, *Magnum Oil*, 829 F.3d 1364, ECF No. 41). We rejected “the PTO’s position that the Board is free to adopt arguments on behalf of petitioners that could have been, but were not, raised by the petitioner during an IPR” and explained that “the Board must base its decision on arguments that were advanced by a party, and to which the opposing party was given a chance to respond.” *Id.* at 1381 (citing *SAS Inst., Inc. v. ComplementSoft, LLC*, 825 F.3d 1341, 1351 (Fed. Cir. 2016)).

Rovalma, S.A. v. Bohler-Edelstahl GmbH & Co. KG, 856 F.3d 1019, 1027 (Fed. Cir. 2017). Although Petitioner’s obviousness analysis of the dependent claims would seemingly subsume claims 1 and 14, Petitioner has not offered any independent analysis, or even a summary conclusion, that claims 1 and 14 are obvious over the combination of Howell and Evans. Specifically, to establish obviousness based on Howell and Evans, it was necessary to “explain how specific references could be combined . . . [and] how any specific combination would operate or read on the [challenged] claims,” including independent claims 1 and 14. *See ActiveVideo Networks, Inc. v. Verizon Commc’ns, Inc.*, 694 F.3d 1312, 1327 (Fed. Cir. 2012).

Likewise, Petitioner’s analysis of claims 1 and 14 as anticipated by Howell does not directly establish that these claims would also be obvious over Howell and Evans because “[d]espite the often quoted maxim that anticipation is the ‘epitome of obviousness,’ *In re Kalm*, 378 F.2d 959, 962 (CCPA 1967), novelty under 35 U.S.C. § 102 and nonobviousness under 35 U.S.C. § 103 are separate conditions of patentability and therefore separate defenses available in an infringement action.” *Cohesive Techs., Inc. v. Waters Corp.*, 543 F.3d 1351, 1363 (Fed. Cir. 2008). In this proceeding, anticipation based on Howell alone is simply not the same as obviousness based on Howell and Evans, and for this reason alone Petitioner has failed to prove by a preponderance of the evidence that claims 1 and 14, and thus claims 3–8, 16, and 17, are obvious over Howell and Evans.

Second, Petitioner has not persuasively established how the combination of Howell and Evans would teach each limitation of claims 1 and 14 — a predicate for supporting a finding that claims 3–8, 16, and 17 are unpatentable as obvious over Howell and Evans. Specifically, Petitioner has not provided sufficient arguments or credible evidence establishing persuasively that the proposed combination of Howell and Evans would prevent passage of a ball after substituting Evans’ tooth-based counter for Howell’s slot and lug counter as proposed by Petitioner. See PO Resp. 58–60. Indeed, Petitioner has not addressed how the combined structure of Howell and Evans would operate or read on claims 1 and 14.

Petitioner relies on Howell (¶¶ 43–45 and Fig. 6B) as disclosing the claim requirement of “the counter capable of allowing movement of the plurality of seat members to the passable position to allow passage of a member a selected number of times and then to the impassable position

thereby preventing passage of another such member.” Ex. 1001, 5:47–53; Pet. 38–41; Ex. 1003 ¶¶ 65–66. For dependent claims 3–8, 16, and 17, however, Petitioner proposes “to substitute Evans’ tooth-based counter for Howell’s slot and lug counter.” Pet. 56. Petitioner contends that “[a] POSITA would have understood that either type of counter (i.e., either opposing teeth or lug/slot) could have been used for counting predetermined events in Howell — they were simply obvious variants, the choice of which to use was mere design preference.” *Id.* at 56–57. In the Petition, Petitioner does not propose simply modifying Howell, but instead to substitute Evans’ tooth-based counter for Howell’s slot and lug counter. *Id.* at 57 (“Moreover, Howell gives express motivation to substitute other types of counters in its indexing assembly in place of the disclosed indexing slots.”). The problem for Petitioner, as detailed by the Patent Owner below, is that the Petition does not address how this new counter structure would also satisfy the distinct claim limitations of claims 1 and 14. Petitioner’s prior anticipation analysis based on Howell alone does not solve this problem.

Patent Owner contends that “Petitioner does not explain how the Howell-Evans combination device could ‘allow passage of a member a selected number of times’ before ‘preventing passage of another such member,’ as required by independent claim 1.” PO Resp. 58–59. According to Patent Owner, the analysis of these limitations based on Howell alone is insufficient “because Petitioner’s proposed modification of Howell eliminates the indexing assembly, which is the very structure that is alleged to provide the functionality required by claim 1.” *Id.* at 59. Patent Owner contends that “[d]espite this dramatic alteration to Howell’s device, which eliminates ‘stop position’ 540, Petitioner makes no attempt to explain how

the combined device would nevertheless still be able to prevent passage of a ball.” *Id.*

In its reply briefing, Petitioner proffers new arguments about how the combination of Howell and Evans would teach each limitation of claims 1 and 14. For example, Petitioner contends that “Petitioner does not propose to remove, wholesale, Howell’s indexing assembly 500 for Evans’s structure, but rather that the indexing slot 512 would be modified with Evans’s teaching of teeth ‘such that the number of teeth, instead of the number of positions, define[s] the number of balls allowed to pass.’” Pet. Reply 24; *but see* Pet. 56 (“to substitute Evans’ tooth-based counter for Howell’s slot and lug counter”). Petitioner also for the first time addresses how the combination of Howell and Evans would teach a final stop position. Pet. Reply 25. Petitioner contends that Patent Owner improperly argues for a physical combinability, which is not the standard for obviousness. *Id.* According to Petitioner, “Howell specifically teaches an indexing assembly with a final stop position that blocks passage of additional balls,” and “this stop position would still exist” in the combination of Howell and Evans. *Id.* Petitioner also suggests that Evans teaches a stop position “to end a desired count.” *Id.*

Our reviewing court inform us “a non-enabling reference may qualify as prior art for the purpose of determining obviousness under § 103.” *Symbol Techs. Inc. v. Opticon Inc.*, 935 F.2d 1569, 1578 (Fed. Cir. 1991). Our reviewing court has also explained that “[t]o render a later invention unpatentable for obviousness, the prior art must enable a person of ordinary skill in the field to make and use the later invention.” *In re Kumar*, 418 F.3d 1361, 1369 (Fed. Cir. 2005). Petitioner has not established persuasively how

Howell and Evans would enable a person of ordinary skill in the field to make and use the invention of claims 1 and 14. Petitioner's failure to directly address the obviousness of claims 1 and 14 in its Petition, and to explain how the combination would operate or read on these claims, leaves us to speculate as to how Howell and Evans could be combined to teach the limitations of claims 1 and 14. The combined structure of Howell and Evans is simply not the same structure as the slot and lug counter described in Howell. Petitioner's anticipation analysis (Pet. 31–41) only addresses the structure of Howell alone. Petitioner's analysis does not address the modified structure based on a Howell and Evans combination that would teach a counter capable of allowing movement of the plurality of seat members to the impassable position thereby preventing passage of another such member. *See* PO Resp. 58–60.

In its reply briefing, and during oral hearing, Petitioner suggested that only the teeth of Evans would be used to modify Howell's indexing slot to prevent the backward movement of Howell's lug so that it will not move backwards away from a final stop position as required by claims 1 and 14. *See* Pet. Reply 24; Tr. 52:15–18 (“in terms of whether or not a lug would move backwards in the Howell context, well, Evans is a completely different structure and there's no allegation that that slot would cause the lug to go backwards”). Petitioner did not raise these theories in its Petition, and creating a new theory of unpatentability is not within the proper scope of a reply brief. *See* 37 C.F.R. § 42.23(b) (“A reply may only respond to arguments raised in the corresponding opposition, patent owner preliminary response, or patent owner response.”). Further, Petitioner's new theories as to how Howell and Evan could teach certain limitations of claims 1 and 14 is

unsupported attorney argument with no corresponding expert analysis.⁷ To the contrary, Mr. Medley testified in his only Declaration that a person of ordinary skill in the art “would have found it obvious to substitute Evans’ tooth-based counter for Howell’s slot and lug counter.” *Id.* ¶ 100.

Mr. Medley never advanced a theory that only the teeth of Evans would be used to modify Howell’s existing slot and lug counter — Petitioner and Mr. Medley proposed a complete substitution of “Evans’ tooth-based counter for Howell’s slot and lug counter.” Pet. 56; Ex. 1003 ¶ 100.

Petitioner has not established persuasively how the combination of Howell and Evans, and more specifically how substituting Evans’ tooth-based counter for Howell’s slot and lug counter would teach an operable counter capable of allowing movement to the impassable position thereby preventing passage of another such member as required by claims 1 and 14. Instead, we find persuasive Patent Owner’s contention that Petitioner’s proposed modification of Howell eliminates Howells’ existing slot and lug indexing assembly, which is the very structure that is alleged to provide the functionality required by claim 1. PO Resp. 58–59. *See also* Ex. 1003 ¶¶ 100–114 (demonstrating that Mr. Medley substitutes Evans’ tooth-based counter for Howell’s slot and lug counter).

Further, Evans’ system is not designed to reach a final stop position, but is instead arranged for activating the circulation valve operating mechanism to open and close the oil well valve after a predetermined

⁷ Petitioner did not provide any expert analysis in conjunction with its reply briefing. In his Declaration submitted with the Petition, Mr. Medley also does not provide any analysis as to how the combination of Howell and Evans could teach each limitation of claims 1 and 14. *See* Ex. 1003 ¶¶ 100–114.

number of longitudinal movements. Ex. 1006, 2:15–20; *see also* PO Resp. 61 (“Evans’s indexing mechanism has no ‘stop’ position and would not, therefore, allow Howell’s device to be suitable for its intended purpose.”), Pet. 56 (noting that “the lug 75 reaches the next slot 125 and moves down to *resume traveling* between lower teeth 76 and middle teeth 77”) (emphasis added). We find persuasive Patent Owner’s contention that “there is no final ‘catch position’ in Evans’s indexing mechanism; the rows of teeth go all the way around the cylindrical indexing collar, forming a continuous circuit with no end.” PO Resp. 61 (citing Ex. 1006, 8:9–14, Fig. 3). Petitioner has not proffered sufficient arguments and credible evidence to support a finding that Howell’s description of a final stop position could be integrated with the substituted tooth-based counter of Evans as Petitioner proposes without adversely impacting both Evans’ and Howell’s intended purposes.

For the reasons set forth above, Petitioner has not proven by a preponderance of the evidence that claims 3–8, 16, and 17 are unpatentable as obvious based on the combination of Howell and Evans.

III. CONCLUSION

Petitioner has not demonstrated by a preponderance of the evidence that claims 1, 2, 7–15, and 17–20 of the ’761 patent are unpatentable under 35 U.S.C. § 102 based on Howell. Additionally, Petitioner has not demonstrated by a preponderance of the evidence that claims 3–8, 16, and 17 of the ’761 patent are unpatentable under 35 U.S.C. § 103 over Howell and Evans.

IV. ORDER

Accordingly, it is:

ORDERED that claims 1–20 of the '761 patent have not been proven to be unpatentable; and

FURTHER ORDERED that because this is a Final Written Decision, 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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Patent 8,261,761 B2

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