

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GODBERSEN-SMITH CONSTRUCTION COMPANY
d/b/a/ GOMACO CORPORATION,
Petitioner,

v.

GUNTERT & ZIMMERMAN CONST. DIV., INC.,
Patent Owner.

IPR2020-01698
Patent 10,029,749 B2

Before JOHN P. PINKERTON, TIMOTHY J. GOODSON, and
JAMES J. MAYBERRY, *Administrative Patent Judges*.

MAYBERRY, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background and Summary

Godbersen-Smith Construction Company, d/b/a GOMACO Corporation, (“Petitioner”), filed a Petition (“Pet.”) requesting *inter partes* review of claims 1–20 (the “Challenged Claims”) of U.S. Patent

No. 10,029,749 B2 (Ex. 1001, the “’749 patent”). Paper 1. Guntert & Zimmerman Const. Div., Inc. (“Patent Owner”) filed a Preliminary Response (“Prelim. Resp.”) to the Petition. Paper 7.¹

With our authorization (Paper 10), Petitioner filed a Preliminary Reply (Paper 13, “Prelim. Reply”) to the Patent Owner Preliminary Response and Patent Owner filed a Preliminary Sur-reply (Paper 16, “Prelim. Sur-reply”) to the Preliminary Reply.²

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a) (2020) (permitting the Board to institute trial on behalf of the Director). To institute an *inter partes* review, we must determine that the information presented in the Petition shows “a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). For the reasons set forth below, upon considering the Petition, Preliminary Response, Preliminary Reply, Preliminary Sur-reply, and evidence of record, we institute an *inter partes* review.

B. Real Parties in Interest

Petitioner identifies Godbersen-Smith Construction Company, “for which GOMACO Corporation is a registered active fictitious name,” as the real party-in-interest. Pet. 110. Petitioner contends that “[n]o unnamed entity is funding, controlling, or otherwise has an opportunity to control or direct this Petition or Petitioner’s participation in any resulting” *inter partes* review. *Id.*

Patent Owner identifies itself as the real party-in-interest. Paper 5, 1.

¹ We refer to the public version of the Patent Owner Preliminary Response.

² We refer to the public versions of the Preliminary Reply and Preliminary Sur-reply.

C. Related Matters

Petitioner and Patent Owner state that they are parties to ongoing litigation involving the '749 patent in the U.S. District Court for the Northern District of Iowa, in a case styled *Zimmerman Const. Div., Inc. v. GOMACO Corp.*, case no. 5:20-cv-4007-CJW-KEM. Pet. 110, Paper 5, 1.

D. '749 Patent

The '749 patent, titled “Automatically Adjusting Swing Legs for Mounting and Aligning and Reorienting Crawlers,” issued July 24, 2018, from an application filed January 17, 2018. Ex. 1001, codes (54), (45), (22). The '749 patent ultimately claims priority, through both continuation and continuation-in-part applications, to a provisional patent application filed March 26, 2010. *Id.* at 1:8–19.

The '749 patent is directed to “concrete slipform paving machines.” Ex. 1001, 1:23–24. We reproduce Figure 1 from the '749 patent below.

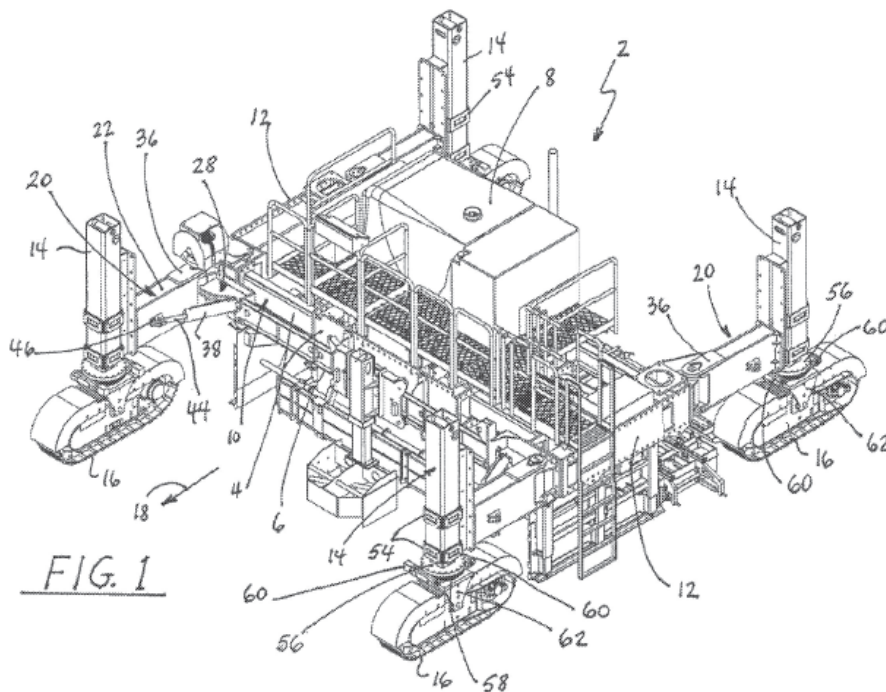


Figure 1 depicts “a front elevational, perspective view of a complete paving machine having pivotable swing legs with a jacking column and a crawler.” *Id.* at 7:56–58. Paving machine 2 includes tractor frame 4, which is defined by center module 6. *Id.* at 8:47–49. Side bolsters 12 are secured to support beams 10, and upright jacking columns 14 are mounted near the ends of the bolsters. *Id.* at 8:52–57. Crawlers 16 are mounted to the lower ends of the jacking columns, and the crawlers are rotatable relative to the jacking columns about vertical axes, an arrangement that is known in the art.” *Id.* at 8:59–8:63.

Each crawler 16 and its associated jacking column 14 are mounted to one of four swing legs 20. Ex. 1001, 9:24–26. Swing legs 20 are mounted to side bolsters 12 using hinge brackets 28, which allow the swing legs to move relative to the side bolsters, with hydraulic actuator 38 used to pivot the swing legs. *Id.* at 9:26–53; Figs. 2, 3.

Whenever swing legs 20 are pivoted inwardly or outwardly relative to tractor frame 4, the orientation of the crawler track has to be changed to keep the track oriented in the paving direction. Ex. 1001, 10:46–55. This change in crawler orientation may be done either with the crawler off the ground or as the paving “machine is walking forward or backward.” *Id.* at 10:55–11:3. To affect this change, rotary actuator 60 is positioned between the bottom of each jacking column and each crawler. *Id.* at 11:35–56; Fig. 4.

Each swing leg assembly includes two angular position transducers or sensors—transducers 70, 78. Ex. 1001, 11:57–60, 12:20–22, Figs. 4A, 5. These transducers generate signals indicating any changes in the angular orientation of crawler yoke 62 relative to jacking column 14 or the swing leg relative to the side bolster. *Id.* at 12:1–6, 23–31. The ’749 patent describes using transducers 70, 78 in a feedback loop to automatically adjust the

angular orientation of the crawler tracks without having to stop the machine or manually adjust the tracks or swing legs:

Onboard computer or processor 82 and the associated transducers 70, 78 form a feedback loop in which the computer receives the angular position signal from swing leg transducer 78. When the angular position of the swing leg changes, the output signal from transducer 78 changes correspondingly. As a result of this orientational change of the swing leg, the angular orientation of the crawler tracks becomes angularly inclined relative to paving direction 18. Computer 82 calculates by how much the angle of the crawler track has to be changed relative to the jacking column (which has also been angularly offset relative to the transport direction by the swivel motion of the swing leg) to reset the crawler track suspended from yoke 62 to the angular orientation of the desired paving direction. The onboard computer then signals by how much worm gear drive 60 must rotationally adjust the orientation of yoke 62 and crawler tracks 16 to again align the crawler tracks with the paving direction. This process is repeated each time the angular position of the swing leg is changed, or when for other reasons the angular orientation of the crawler tracks becomes misaligned from the desired paving direction of the machine.

Id. at 12:38–64.

E. Illustrative Claims

Of the Challenged Claims, claims 1 and 17 are independent claims.

Claim 1, reproduced below, is representative.

1. A swing leg assembly, comprising:
 - a swing leg configured to mechanically couple with a surface of a module frame;
 - a crawler track;
 - an upright jacking column secured to the swing leg, having a rotary connection between the jacking column and the crawler track permitting relative rotational movements of the crawler track and the jacking column about a first upright axis;
 - a first angular position transducer between the jacking column and the crawler track, configured to emit a first signal

which is indicative of an angular orientation of the crawler track relative to the jacking column;

a second angular position transducer between the swing leg and the module frame, configured to emit a second signal which is indicative of an angular orientation of the swing leg relative to the module frame;

a power drive between the jacking column and the crawler track, configured for translating relative rotational movements between the jacking column and the crawler track; and

a processor operable to receive the first and second signals and configured to emit a control signal for activating the power drive and thereby rotationally move the crawler track relative to the jacking column to maintain an orientation of the crawler track in response to changes of the first signal caused by pivotal motions of the swing leg about an upright pivot shaft.

Ex. 1001, 22:40–67.

Claim 17 is similar to claim 1, but further recites additional components of a paving machine, including a “module frame” and “two or more swing leg assemblies,” with each assembly including the elements recited in claim 1. *Id.* at 23:54–24:33.

F. Prior Art and Asserted Grounds

Petitioner asserts that the Challenged Claims are unpatentable based on six grounds:

Claim(s) Challenged	35 U.S.C. §	References/Basis
1–11, 13–17, 19, 20	103	CIII ³ , Rio ⁴
18	103	CIII, Rio, Smolders ⁵

³ GOMACO, Corp., “Commander III New Generation Trimmer/Paver Operator Service Manual, G21 Controls,” Rev. 1.4 (2002) (Ex. 1005, “CIII”).

⁴ Rio, et. al., US 7,523,995 B2, issued April 28, 2009 from an application filed July 14, 2005 (Ex. 1006, “Rio”).

⁵ Smolders et al., US 6,481,924 B1, issued November 19, 2002 (Ex. 1010, “Smolders”).

Claim(s) Challenged	35 U.S.C. §	References/Basis
1–10, 13–17, 19, 20	103	CIII, Littman ⁶
18	103	CIII, Littman, Smolders
11, 12	103	CIII, Rio, Widdrington ⁷
11, 12	103	CIII, Littman, Widdrington

Petitioner relies on the declaration testimony of Dr. William Singhose (Ex. 1002) in support of these grounds.

The following subsections provide brief descriptions of the asserted prior art references.

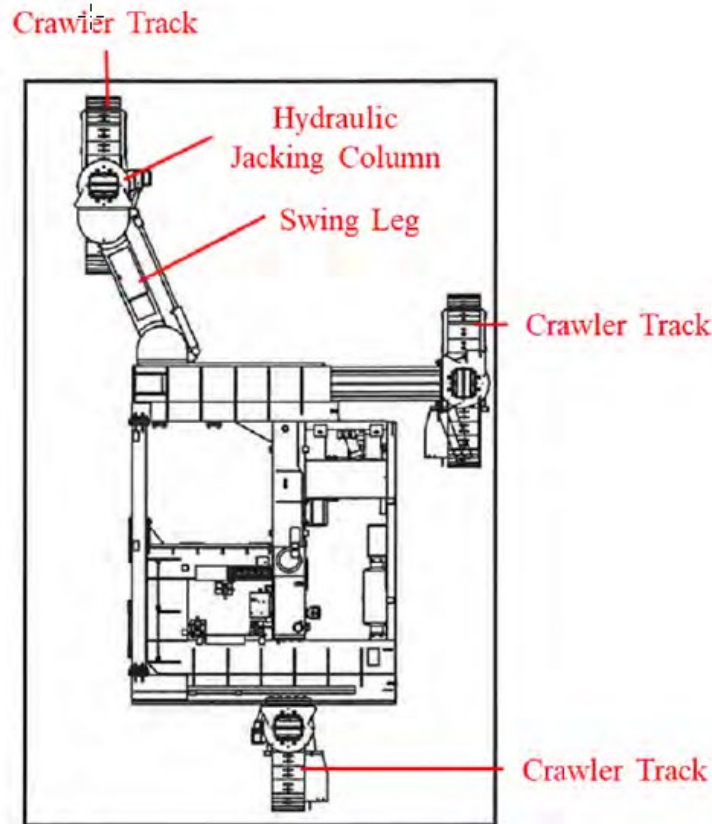
1. CIII

CIII, titled “Commander III New Generation Trimmer/Paver Operator Service Manual, G21 Controls,” is an operating manual for the Gomaco Commander III, one of Petitioner’s paving machines. *See* Ex. 1005, 4. CIII indicates that it is revision number 1.4 and includes a copyright date of 2002. *Id.* at 3.

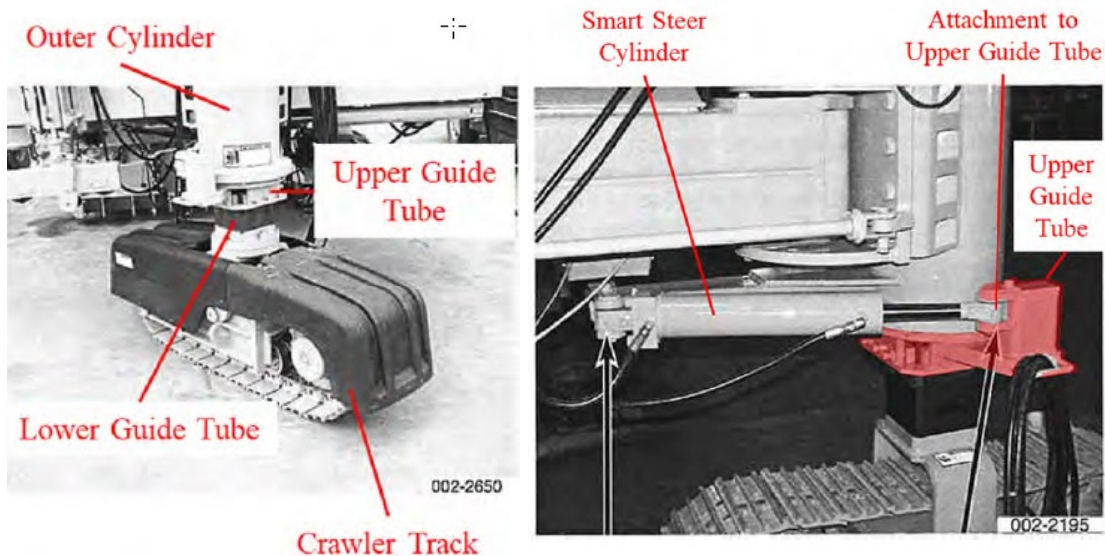
We reproduce an annotated version of a drawing of the CIII paver, below.

⁶ Littman et. al., US 4,558,758, issued December 17, 1985 (Ex. 1007, “Littman”).

⁷ Widdrington, US 3,252,349, issued May 24, 1966 (Ex. 1008, “Widdrington”).



Pet. 13. This image depicts a plan view of a three-crawler version of the CIII paver, with annotations added by Petitioner that identify the crawler tracks, jacking column, and swing leg. We reproduce two additional annotated images from CIII from the Petition, below.



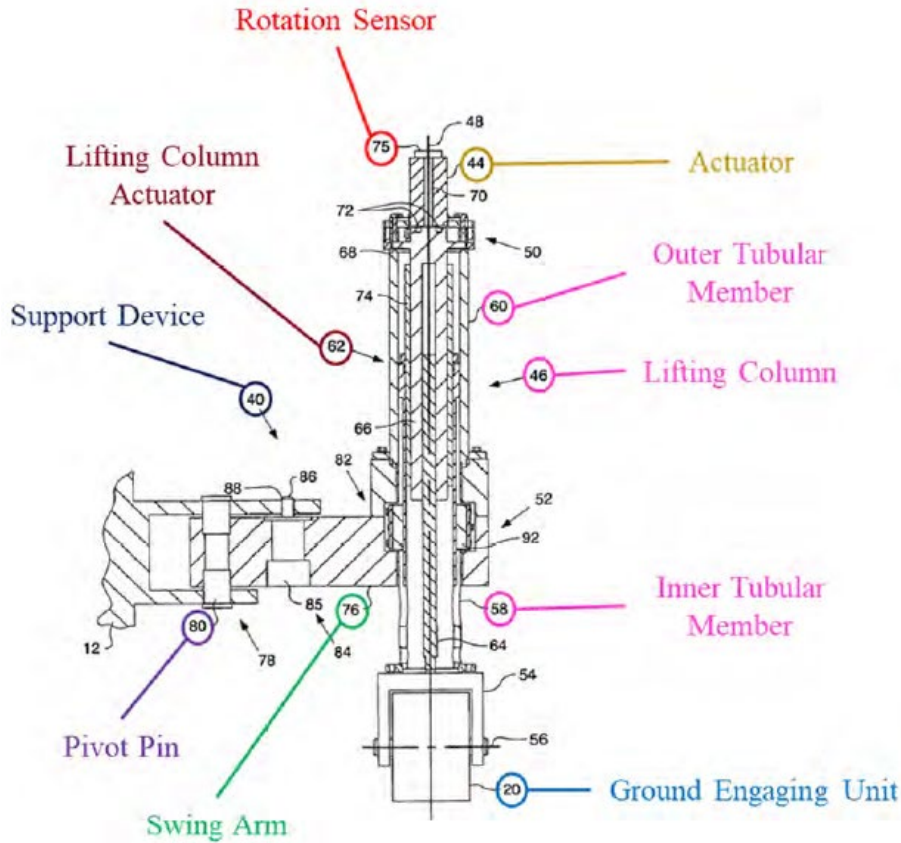
Pet. 15, 17. The image on the left depicts an annotated image of a crawler and lower portion of a jacking column of CIII, and the image on the right depicts a “smart steer cylinder” attached to the lower portion of the jacking column. *Id.* at 15–17. “[T]he steering cylinder, when actuated, rotates the guide tubes and crawler track in unison relative to the outer cylinder.”

Pet. 16 (referencing Ex. 1005, 8-105–107, 8-71–72, 5-35, 5-37).

CIII includes an electronic steering system that includes a sensor, feedback potentiometer, servo valve, and control loop. Ex. 1005, 8-105. “The feedback pot[entiometer] measures the position of the track and sends a continuous signal to the [controller], indicating the track position” and the controller compares the steer and feedback potentiometer signals and causes the track to rotate to the desired orientation. *Id.* at 8-106.

2. *Rio*

Rio, titled “Milling Machine,” issued April 28, 2009. Ex. 1006, codes (54), (45). Rio is generally directed to machines that treat road surfaces, “and more particularly to a road planer or milling machine.” *Id.* at 1:5–7. We reproduce Rio’s Figure 2, as annotated in the Petition, below.



Pet. 25. Figure 2 depicts a longitudinal section of a portion of Rio's cold planer, showing a swing arm, lifting column, and ground engaging unit.

Ex. 1006, 3:28–30, 3:62–64, 4:51–53, 6:12–15. Annotations identify ground engaging unit 20, support device 40, actuator 44, lifting column 46, inner tubular member 58, outer tubular member 60, lifting column actuator 62, rotation sensor 75, swing arm 76, and pivot pin 80.

Actuator 42 (not depicted above) connects to support device 40 and pivots swing arm 76 relative to frame 12. Ex. 1006, 4:40–44; *see id.*, Fig. 3 (depicting actuator 42). Actuator 44 rotates ground engaging unit 20 to maintain it in the proper orientation in response to swing arm 76 pivoting. *Id.* at 4:44–47. Controller 32 controls the movement of actuators 42, 44. *Id.* at 4:47–50. Support device 40 includes lifting column 46, which is associated with ground engaging unit 20. *Id.* at 4:51–53. Actuator 44 is

connected to lifting column 46 and causes at least a portion of the lifting column 46 to rotate about axis 48 to change the orientation of ground engaging unit 20. *Id.* at 4:56–59.

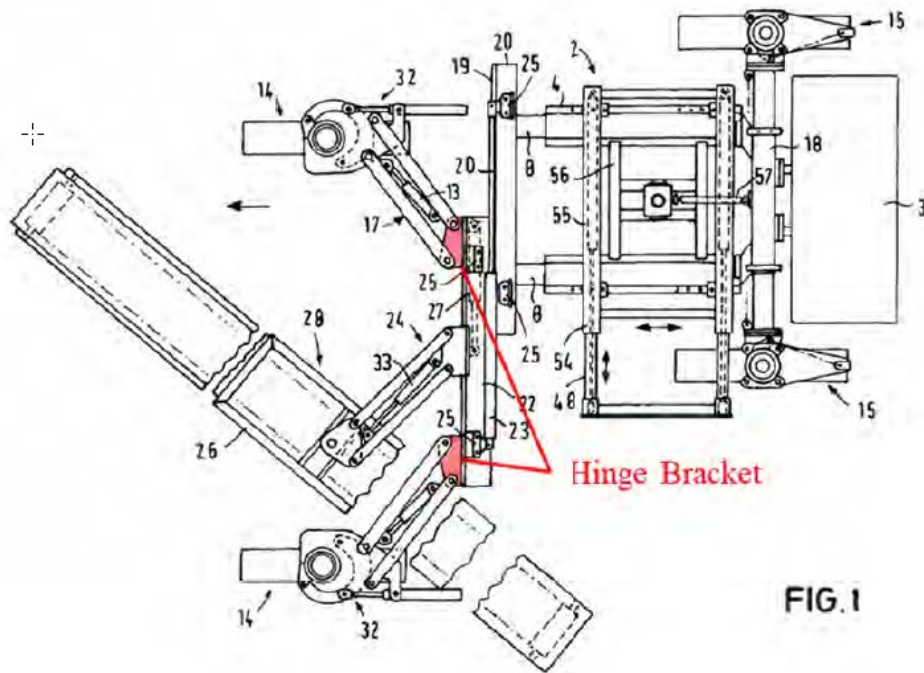
Preferably, at least one of actuators 42, 44 is a rotary actuator, such as “a double helix sliding spline design to produce high torque rotary motion in a compact device.” Ex. 1006, 4:61–5:1. “[O]ther rotary actuators such as worm or sun gear designs . . . may also be employed with good result. Such use of a rotary actuator provides a compact apparatus to achieve rotary motion without the need for complicated and bulky linkages, and . . . provide[s] fine rotary steering control.” *Id.* at 5:1–7. Rio discloses that “actuator 44 [may be] positioned on the lifting column 46 at a location spaced apart from . . . actuator 42 along . . . axis 48,” and, “[p]referably, . . . is located at an upper portion 50 of the lifting column 46.” *Id.* at 5:8–12.

Controller 32 receives ground engaging unit pivot position signal 122 and ground engaging unit rotational position signal 124. Ex. 1006, 6:65–7:13. Pivot sensor 83 generates signal 122 to indicate the instantaneous angular position of swing arm 76 relative to frame 12. *Id.* at 7:19–23. Rotation sensor 75 generates signal 124 to indicate the instantaneous rotation angle of the ground engaging unit 20. *Id.* at 7:23–27. Controller 32 sends control signals actuators 42, 44. *Id.* at 7:28–30.

In operation, for example, controller 32 actuates actuator 42 to move swing arm 76. Ex. 1006, 8:18–32. “[P]ivot sensor 83 tracks this motion and sends responsive pivot position signals 122 to . . . controller 32,” which “responsively actuates . . . actuator 44 to counter-rotate . . . ground engaging unit 20 to maintain it in the same running direction as [swing arm 76] moves toward the retracted position.” *Id.* at 8:32–37.

3. Smolders

Smolders, titled “Slip-Form Paver,” issued November 19, 2002. Ex. 1010, codes (54), (45). Smolders is generally directed “to a slip-form paver and a truck assembly for a construction machine.” *Id.* at 1:3–4. We reproduce an annotated version of Smolder’s Figure 1, from the Petition, below.

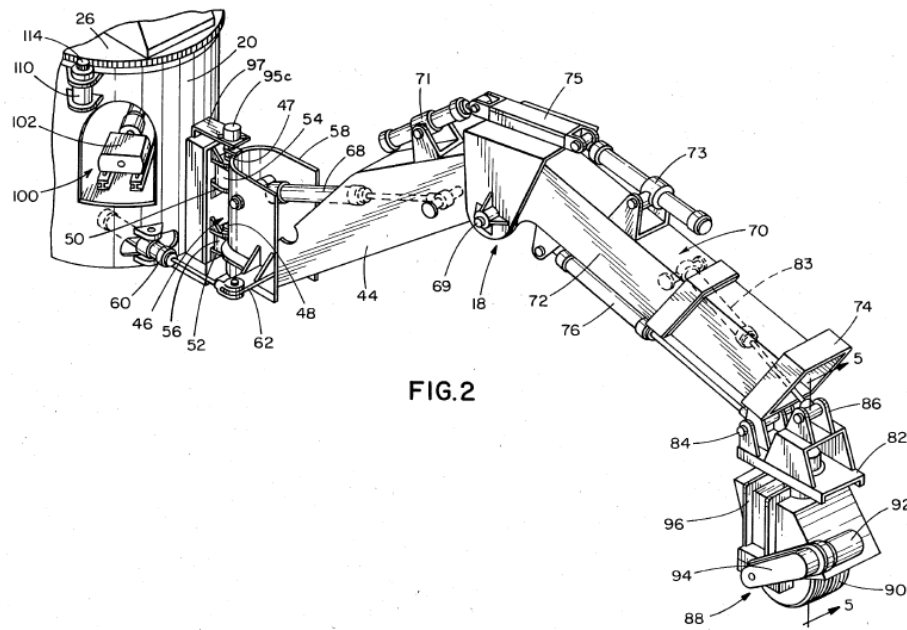
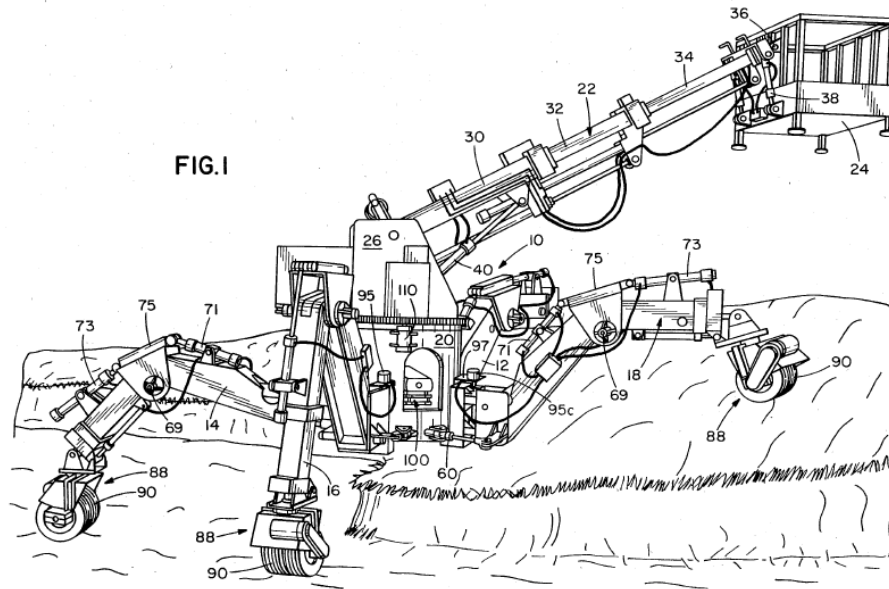


Pet. 77. Figure 1 depicts “a plan view of [Smolder’s] slip-form paver,” with annotations, in red, showing hinged brackets. Ex. 1010, 3:32. Relevant to this proceeding, Smolder’s slip-form paver includes a hinged bracket on multiple swing legs. *Id.*, Fig. 1.

4. Littman

Littman, titled “Prime Mover,” issued December 17, 1985. Ex. 1007, codes (54), (45). Littman is generally directed “to a prime mover having a plurality of elongated, segmented legs with individual steerable drive means on each so as to enable the prime mover to be easily moved to and

positioned properly in a wide variety of environments and terrains.” *Id.* at 1:6–10. We reproduce Littman’s Figures 1, 2, and 4, below.



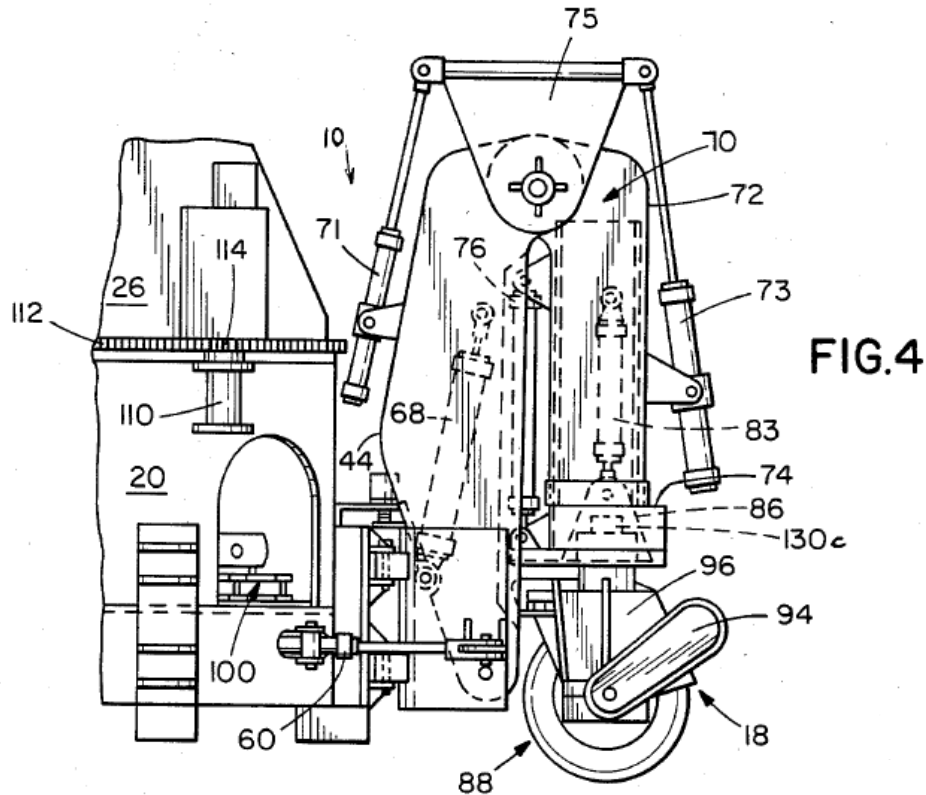
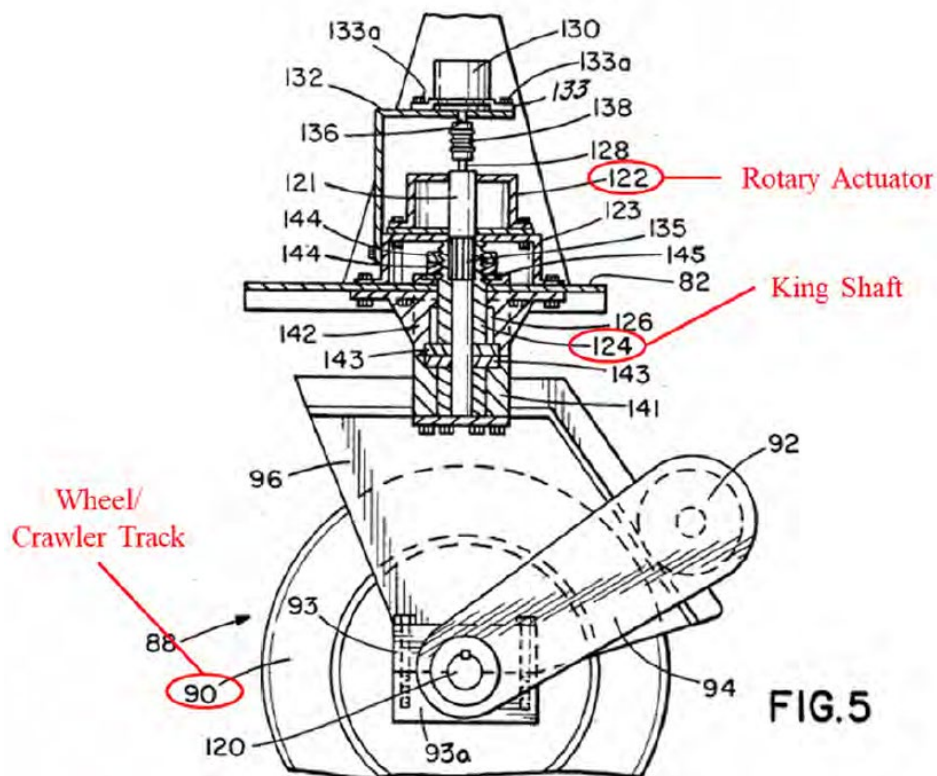


Figure 1 depicts “a perspective view of a prime mover illustrated in use on hilly or uneven terrain, with each of the legs at least partially extended,” and Figure 2 depicts “an enlarged view illustrating . . . [an] elongated leg.” Ex. 1007, 2:18–22. Figure 4 depicts “a side view of the prime mover illustrating one leg in the fully retracted position.” *Id.* at 2:25–26.

Prime mover 10 includes four elongated legs 12, 14, 16 and 18 connected to central body 20. Ex. 1007, 2:64–3:3. Legs 12, 14, 16 and 18 have multiple sections that pivot relative to one another. *Id.* at 3:31–32. Leg 18 (Figures 2, 4) includes first section 44 pivoted about pivot means 46 for moving sideways of central body 20 using actuating means 60. *Id.* at 3:33–43.

Second section 70 includes outer box-like member 72 and telescoping box-like member 74. Ex. 1007, 3:56–58. Section 82 is pivotally connected to member 74, with actuating means 84 pivoting section 82 relative to second section 70. *Id.* at 4:3–8. Drive means 88, connected to section 82, includes wheel means 90, which may be a single wheel, dual wheels, or tracks. *Id.* at 4:13–21.

We reproduce an annotated version of Littman’s Figure 5, from the Petition, below.



Pet. 87. Figure 5 depicts “a cross-sectional detail view of a drive means taken generally along the line 5-5 of” Figure 2. Ex. 1007, 2:28–29. Wheel means 90 may be rotated about a horizontal axis, through axle shaft 120, and a vertical axis through king pin or shaft 124, with rotation about the vertical axis caused by actuator 122. *Id.* at 4:27–32, 5:14–42.

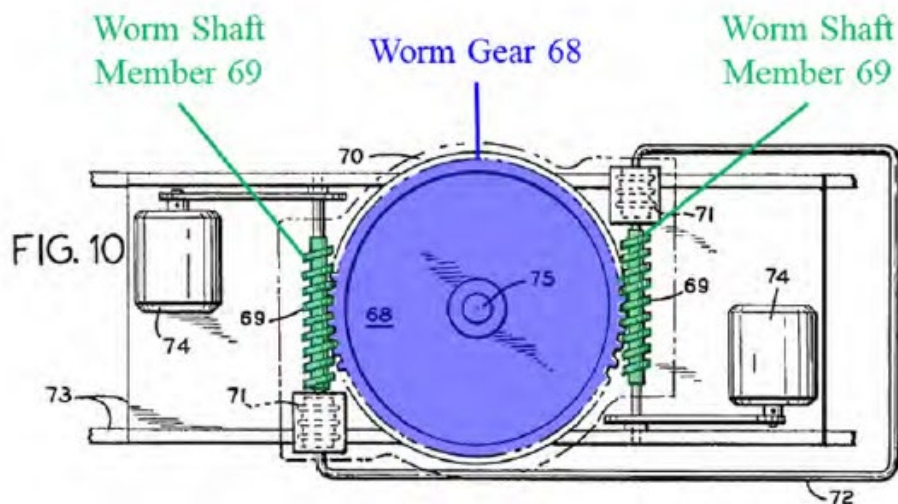
In the four-wheel parallel steering mode of operation, the steering command comes from the synchro transmitter 175 which is operatively connected to the steering wheel or steering command 176. The signal is directed to the four synchro differential transformers 95a, 95b, 95 and 95c, which are located at the pivot points of the stabilizing legs 12, 14, 16 and 18, respectively, and then to the four synchro control transformers 130a, 130b, 130 and 130c, which are located at the wheels. The synchro differential transformers 95a, 95b, 95 and 95c add or subtract the leg position angle from the steering command angle to provide a signal to the wheel synchro control transformers 130a, 130b, 130 and 130c, which is independent of the position of the stabilizing legs. When the wheels 90 are driven to the correct position by the hydraulic rotary actuators 122a, 122b, 122 and 122c, the output of the rotor of the synchro control transformers 130a, 130b, 130, and 130c is brought to the null, that is no output, and the positioning servos are commanded to stop.

Ex. 1007, 8:42–61; *see also id.* at Figs 13–15 (depicting the control system).

5. Widdrington

Widdrington, titled “Gear Drive Mechanism,” issued May 24, 1966.

Ex. 1008, 1. Widdrington discloses a worm gear mechanism. *Id.* at 1:9–12, 6:1–5. We reproduce an annotated version of Widdrington’s Figure 10, from the Petition, below.



Pet. 106. Figure 10 depicts a schematic of an “externally toothed gear.” Ex. 1008, 5:72–73. Annotations identify worm gear 68, in violet, and worm shaft members 69, in green. Relevant to this proceeding, Widdrington discloses that the depicted gear “is in the nature of a worm gear 68 engaged by a plurality of worm shaft members 69 equipped with a torque balancing hydraulic pressure system.” *Id.* at 6:1–4.

II. DISCRETIONARY DENIAL

Patent Owner contends that we should exercise our discretion under 35 U.S.C. § 325(d) to deny the Petition, applying our precedential decisions in *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 (PTAB Feb. 13, 2020) (precedential) (“*Advanced Bionics*”) and *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, first paragraph) (“*Becton, Dickinson*”). Prelim. Resp. 73–77.⁸ Specifically, Patent Owner argues that “*CIII*, the primary reference asserted in each ground, is substantially the same art as made of record by the examiner during prosecution of U.S. Patent Appl. 15,873,757, which matured into the ’749 [p]atent[,] [a]nd Petitioner fails to demonstrate that the examiner materially erred.” *Id.* at 74.

For the reasons provided below, we do not exercise our discretion to deny institution under § 325(d).

⁸ Petitioner addresses discretionary denial under both 35 U.S.C. § 325(d) and § 314(a), the latter based on a parallel district court proceeding. Pet. 6–11. Patent Owner does not argue for discretionary denial under § 314(a), and we do not address our discretion under § 314(a) here.

1. Applicable Framework

Section 325(d) provides that, in determining whether to institute an *inter partes* review, “the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.” 35 U.S.C. § 325(d). The Board uses a two-part framework in determining whether to exercise its discretion under § 325(d), specifically:

- (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and
- (2) if either condition of [the] first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.

Advanced Bionics at 8.

In applying the two-part framework, we consider several non-exclusive factors from *Becton, Dickinson*, which provide “useful insight into how to apply the framework” (*Advanced Bionics* at 9): (a) the similarities and material differences between the asserted art and the prior art involved during examination; (b) the cumulative nature of the asserted art and the prior art evaluated during examination; (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection; (d) the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art; (e) whether Petitioner has pointed out sufficiently how the examiner erred in its evaluation of the asserted prior art; and (f) the extent to which additional evidence and facts presented in the Petition warrant reconsideration of the prior art or arguments. *Becton, Dickinson* at 17–18. If, after review of factors (a), (b),

and (d), we determine that the same or substantially the same art or arguments previously were presented to the Office, we then review factors (c), (e), and (f), which relate to whether the petitioner demonstrates that the Office erred in a manner material to the patentability of the challenged claims. *Advanced Bionics* at 10.

2. *Analysis*

a) *Part One of the Advanced Bionics framework*

Under the first part of the *Advanced Bionics* two-part framework, we determine “whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office.” *Advanced Bionics* at 8. We look to *Becton, Dickinson* factors (a), (b), and (d) to inform our analysis. *Advanced Bionics* at 9–10.

(1) *Becton, Dickinson Factors (a) and (b)*

Factor (a) under the *Becton, Dickinson* construct looks at “the similarities and material differences between the asserted art and the prior art involved during examination.” *Advanced Bionics* at 9 n.10. Factor (b) under the *Becton, Dickinson* construct looks at “the cumulative nature of the asserted art and the prior art evaluated during examination.” *Id.* Patent Owner contends that U.S. Patent Numbers 9,541,195 and 9,464,716, each assigned to Petitioner, “were made of record by the examiner during prosecution” of the application that matured into the ’749 patent. Prelim. Resp. 74–75. Patent Owner adds that the CIII machine is marked with these patent numbers. *Id.* at 75 (referencing Ex. 2008). Patent Owner concludes that “CIII is substantially similar to, and cumulative of, the technology disclosed in” these two patents. *Id.* at 76.

Petitioner replies that Patent Owner ignores that the Petition does not rely on CIII alone but, instead, “heavily relies on Rio, and Rio teaches the very concepts that the ’749 patent states are novel in its claims.” Prelim. Reply 5. Petitioner adds that Patent Owner does not dispute “that neither Rio nor any reference like it was considered during prosecution” of the application that matured into the ’749 patent. *Id.*

Patent Owner replies that CIII is substantially similar to the prior art considered by the examiner and that “the addition of *Rio* does not warrant reconsideration of *CIII* because *Rio* does not bridge the sufficiently wide gap between *CIII* and the claimed invention.” Prelim. Sur-reply 5.

We agree with Petitioner that factors (a) and (b) weigh against discretionary denial. Three of the six grounds of the Petition rely on Rio for its rotary actuator and sensor and feedback system, elements recited in each of the independent claims. Similarly, the other three grounds rely on Littman for its rotary actuator and sensor and feedback system. Patent Owner does not direct us to nor do we discern prior art of record during the prosecution of the application that matured into the ’749 patent that is substantially the same as, or cumulative of Littman’s or Rio’s disclosure of, these features.

Accordingly, we determine that there are material differences between the prior art considered during prosecution and the prior art on which the Petition relies.

(2) *Becton, Dickinson Factor (d)*

Factor (d) under the *Becton, Dickinson* construct looks at “the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art” or Patent Owner distinguishes the prior art. *Advanced Bionics* at 9 n.10.

Patent Owner does not direct us to any overlap of arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art.

b) Part Two of the Advanced Bionics framework

Because we determine, in our analysis of part one, that the same or substantially the same art or arguments were not previously presented to the Office, we need not address part two of the analysis.

c) Conclusion

Based on our analysis of the *Becton, Dickinson* factors within the *Advanced Bionics* framework, we determine that discretionary denial under § 325(d) is not appropriate under the facts before us.

III. UNPATENTABILITY

A. Applicable Law

Petitioner's asserted grounds of unpatentability are based on obviousness under 35 U.S.C. § 103.

Section 103(a) forbids issuance of a patent when “the differences between the subject matter sought to be patented 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) when available, objective evidence, such as commercial success, long felt but unsolved needs, and failure of others.

Graham v. John Deere Co., 383 U.S. 1, 17–18 (1966).

“[O]bviousness must be determined in light of *all the facts*, and . . . a given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine” teachings from multiple references. *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006) (emphasis added); *see also PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1196 (Fed. Cir. 2014) (“The presence or absence of a motivation to combine references in an obviousness determination is a pure question of fact.”).

Notwithstanding what the teachings of the prior art would have suggested to one with ordinary skill in the art at the time of the patent’s invention, the totality of the evidence submitted, including objective evidence of nonobviousness, may lead to a conclusion that the challenged claims would not have been obvious to one with ordinary skill in the art. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984). Objective evidence of nonobviousness, so called “secondary considerations,” may include long-felt but unsolved need, failure of others, unexpected results, commercial success, copying, licensing, and praise. *See Graham*, 383 U.S. at 17–18; *Leapfrog Enters., Inc. v. Fisher–Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007).

B. Level of Ordinary Skill in the Art

The level of skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Petitioner contends that a person having ordinary skill in the art “would have had at least a four-year degree in mechanical engineering or a closely related field and at least two years of experience designing, developing, or operating heavy machinery, including their components and control systems.” Pet. 11 (referencing Ex. 1002 ¶ 22).

Petitioner also contends that “[a]dditional education could substitute for professional experience and significant work experience—such as working with, servicing, or operating heavy machinery in the field—could substitute for formal education.” *Id.*

Patent Owner does not address the level of ordinary skill in the art expressly in the Preliminary Response.

For the purposes of this Decision, we apply Petitioner’s definition of the level of ordinary skill in the art. We determine that this definition is consistent with the prior art of record and the skill reflected in the Specification of the ’749 patent, based on our review of the limited record.

C. Claim Construction

In *inter partes* reviews, we interpret a claim “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b) (2019). Under this standard, we construe the claim “in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” *Id.*

Petitioner contends that we need not resolve any claim construction disputes between the parties as the asserted prior art discloses the claimed subject matter under either party’s constructions. Pet. 11–12.

Patent Owner argues that we need to construe the term “a power drive between the jacking column and the crawler track,” recited in both independent claim 1 and 17. Prelim. Resp. 9. We address this term below.

1. “a power drive between the jacking column and the crawler track”

Patent Owner contends that we should construe the term “a power drive between the jacking column and the crawler track” to mean “a power

drive *physically* between the jacking column and the crawler track.” Prelim. Resp. 9. For the reasons below, we agree.

First, Patent Owner argues that, in the parallel district court proceeding, the term was construed to require the power drive to be physically located between the jacking column and the crawler track. Prelim. Resp. 10 (referencing Ex. 2005, 11–12). Patent Owner explains that the district “[c]ourt held that the use of ‘between’ in the ‘power drive section of the ‘749 [p]atent can only be reasonably understood as referring to physical location.’” *Id.* (quoting Ex. 2005, 12); *see also* 37 C.F.R. § 42.100(b) (“Any prior claim construction determination concerning a term of the claim in a civil action, or a proceeding before the International Trade Commission, that is timely made of record in the *inter partes* review proceeding will be considered.”).

Second, Patent Owner argues that its proposed construction is consistent with the Specification. Prelim. Resp. 10–12. Patent Owner adds that the word “between” is used twice in the claim term, with the first use indicating a physical location. *Id.* at 13.

Patent Owner argues that the Petition relies on a functional meaning of the term, rather than a physical location requirement. Prelim. Resp. 12. Patent Owner argues that Petitioner bases this use on a mischaracterization of testimony from Patent Owner’s expert in the parallel litigation—testimony subsequently clarified by the expert. *Id.* at 12–13.

In construing a claim term, we start with the language of the claims. *See, e.g., Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc) (“[T]he context in which a term is used in the [claim at issue] can be highly instructive.”). The complete limitation recites “a power drive between the jacking column and the crawler track, configured for translating

relative rotational movements between the jacking column and the crawler track.” Ex. 1001, 22:57–60 (claim 1), 24:22–25 (claim 17).

We determine, on the current record, that the plain and ordinary meaning of the first use of the word “between” in the claim term requires a physical location. The first phrase is directed to three physical components (a power drive, a jacking column, and a crawler track) and the use of the word “between” establishes the physical relationship of these three components. In contrast, the second use of the word “between” in the limitation defines a functional relationship— the second phrase defines how these elements are configured to effect the jacking column and crawler track moving rotationally relative to each other. *Cf.* Ex. 2005, 12 (district court reasoning that “[a]lthough ‘between’ is capable of multiple meanings, its first use in the power drive [limitation] . . . can only be reasonably understood as referring to physical location. To interpret the language otherwise would render the first use of the word ‘between’ redundant of its second use in the same [limitation].”).

“[T]he specification ‘is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.’” *Phillips*, 415 F.3d at 1315. Here, in the embodiment depicted in Figure 4 of the ’749 patent, rotary actuator 60 is bolted to mounting plate 56 positioned at the lower end of tube 50 of jacking column 14. Ex. 1001, 11:35–45. As seen in Figures 4 and 4A, rotary actuator 60 is physically located above crawler track 16. As such, this embodiment is consistent with the proposed construction.

Petitioner does not provide any persuasive arguments or evidence in support of its interpretation of the claim term. *See* Pet. 43 (arguing that Patent Owner’s “expert, applying a *functional* definition of between,

represented that such a power drive is ‘between’ the jacking column and crawler track,” but providing no further support). We determine, at this stage of the proceeding, that Petitioner’s reliance on extrinsic evidence from the parallel litigation, without more, is insufficient to support a construction that deviates from the plain and ordinary meaning of the claim term. *Cf. Phillips*, 415 F.3d at 1318 (“[A] court should discount any expert testimony ‘that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent.’”).

In summary, on the current record, we construe the term “a power drive between the jacking column and the crawler track” to mean “a power drive physically between the jacking column and the crawler track.”⁹

2. Additional terms

We determine that we need not expressly construe any other claim terms to resolve the parties’ disputes on the current record. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

D. Ground 1: Claims 1–11, 13–17, 19, and 20 as unpatentable over CIII and Rio

Petitioner contends that claims 1–11, 13–17, 19, and 20 are unpatentable over CIII and Rio. Pet. 5. We first address Petitioner’s reasons for combining CIII and Rio, then address Petitioner’s contentions with

⁹ Our claim construction is preliminary at this stage of the proceeding, and the parties may further develop the record at trial to support their claim interpretations.

respect to how the combined teachings of CIII and Rio render claims 1–11, 13–17, 19, and 20 obvious.

1. Petitioner’s reasons for combining CIII and Rio

Petitioner contends that a person having ordinary skill in the art would have found it “obvious to use Rio’s rotary actuator instead of CIII’s steering cylinder to rotate the crawler track and to incorporate Rio’s teaching of a control system that maintains the track in a desired orientation as the swing leg pivots.” Pet. 28. First, Petitioner contends that CIII and Rio are analogous art, as both references are in the same field of endeavor as the ’749 patent—both references “describe swing-leg assemblies for road-construction machines.” *Id.* (referencing Ex. 1002 ¶¶ 44–47, Ex. 1005, 3-17–18, Ex. 1006, Fig. 2).

Petitioner contends that both references “disclose a sensor that measures the angular position of the crawler tracks and a controller that rotates the crawler tracks based on the receipt of multiple signals.” Pet. 28 (referencing Ex. 1005, 8-105–06; Ex. 1006, 6:6–11, 8:39–47; Ex. 1002 ¶ 47). Petitioner reasons that “[c]ombining aspects of [CIII’s and Rio’s] swing-leg assemblies would have involved substituting one known element for another according to known methods to yield predictable results.” *Id.* (referencing Ex. 1002 ¶ 47). Petitioner adds that Rio addresses the same problem as the ’749 patent—manually repositioning swing leg assemblies on road machines. *Id.* at 28–29.

a) Rio’s teaching of a rotary actuator to rotate a crawler track

Petitioner contends that a person having ordinary skill in the art would have been motivated to combine the teachings of CIII and Rio and, specifically, replace CIII’s steering cylinder with Rio’s rotary actuator. Pet. 29 (referencing Ex. 1002 ¶ 48). Petitioner contends that a rotary

actuator would provide CIII's crawler track with a greater range of motion. *Id.* (referencing Ex. 1009¹⁰, 2:51–53, 7:36–60, Fig. 7; Ex. 1002 ¶ 48).

Petitioner explains that “[g]reater range of motion leads to greater maneuverability of the paver, faster adjustments in crawler-track position, and fewer risks to the safety of the operators.” *Id.* (referencing Ex. 1002 ¶ 48). Petitioner adds that a person having ordinary skill in the art “would have further been motivated to implement Rio’s rotary actuator to provide ‘a compact apparatus’ with high torque that achieves ‘fine rotary steering control’ and provides ‘rotary motion without the need for complicated and bulky linkages.’” *Id.* (referencing Ex. 1006, 4:66–5:7; Ex. 1002 ¶ 48). As Petitioner and Dr. Singhose explain, CIII’s steering cylinder is an example of a steering system with bulky linkages, for which Rio offers a solution. *Id.*; Ex. 1002 ¶ 48.

Petitioner also explains that rotary actuators were well known in the art, including Rio, Littman, Miller, and Johns¹¹. Pet. 29–30 (referencing Ex. 1007, 3:31–5:52; Ex. 1009, 2:51–53, 7:36–60, Fig. 7; Ex. 1011 ¶ 20, Fig. 2; Ex. 1002 ¶¶ 49–50).

Relevant to our decision here, Petitioner contends that a person having ordinary skill in the art “would have known to mount Rio’s rotary actuator 44 at the bottom of CIII’s jacking column.” Pet. 30 (referencing Ex. 1006, 5:8–11; Ex. 1002 ¶¶ 52–55). Petitioner bases this contention, at least in part, on Rio’s disclosure that “[i]n another of the preferred embodiments, the second actuator 44 is positioned on lifting column 46 at a location spaced apart from the first actuator 42 along the lifting column axis 48.” Ex. 1006,

¹⁰ Miller et al., US 4,029,165, issued June 14, 1977 (Ex. 1009, “Miller”).

¹¹ Johns, US Pub. 2003/0173130 A1, published September 18, 2003 (Ex. 1011, “Johns”).

5:8–11. Dr. Singhose declares that CIII’s hydraulic pivot cylinder is not attached to CIII’s jacking column, such that it would not interfere with a rotary actuator positioned anywhere along the vertical axis of the jacking column. Ex. 1002 ¶ 52. Dr. Singhose adds that CIII’s steering cylinder attaches near the bottom of the jacking column. *Id.*

Petitioner also contends that positioning Rio’s rotary actuator at the bottom of CIII’s jacking column would simplify the jacking column’s design, “as the guide tubes would no longer need to rotate relative to the outer cylinder.” Pet. 30; *see also* Ex. 1002 ¶ 53–55 (explaining how CIII’s jacking column could be modified so that the guide tubes would no longer need to rotate and that only the crawler track would rotate). Petitioner adds that “it was well known to position a rotary power drive at the bottom of a jacking column and use it to rotate a crawler track,” relying on Littman, Miller, and Johns in support. Pet. 30–31 (referencing Ex. 1007, 5:14–59, Figs. 4, 5; Ex. 1009, 7:35–58, Fig. 7; Ex. 1011 ¶ 20, Fig. 2).

Patent Owner argues that Rio teaches that its rotary actuator is to be placed at the upper portion of its jacking column. Prelim. Resp. 29 (referencing Ex. 1006, 5:21–24). Patent Owner argues that this teaching “is significant given *Rio*’s compact design. *Rio*’s jacking column is designed to be compact and narrow to fit in tightly confined spaces.” *Id.* (referencing Ex. 1006, 2:35, Fig. 2). Patent Owner adds that, although Rio discloses that its rotary actuator produces sufficiently high torque, this sufficiency is because the actuator is located at the top of the jacking column. *Id.* at 30 (referencing Ex. 1006, 5:8–16, 5:65–6:6, Fig. 2). Patent Owner also argues that Rio “discourages having too many mechanical devices positioned at the lower portion of the jacking column.” *Id.* (referencing Ex. 1006, 5:14–16). Patent Owner concludes that Rio’s disclosure of placing rotary actuator 44 at

the upper portion of the jacking column undermines Petitioner’s reasoning. *Id.* at 30–31.

We have considered Patent Owner’s arguments, but do not find them sufficient, at this stage of the proceeding, to demonstrate a deficiency in Petitioner’s position. We recognize that Rio expresses a preference for placing rotary actuator 44 in the upper portion of its jacking column, and such a preference is relevant in assessing Petitioner’s position that a person having ordinary skill in the art would have placed the actuator at the bottom of the column. *Cf. Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1052 n.15 (Fed. Cir. 2016) (en banc) (“We note, however, that, even if Plaisant does not teach away, its statements regarding users preferring other forms of switches are relevant to a finding regarding whether a skilled artisan would be motivated to combine the slider toggle in Plaisant with the mobile phone in Neonode.”). We determine, however, that Petitioner has provided sufficient reasons, with rational underpinning, to overcome this evidence, at this stage of the proceeding.

First, we determine, on the current record, that Rio at least suggests that its actuator could be placed along the length of the jacking column and CIII at least suggests that a viable placement of a steering mechanism is near the bottom of the jacking column. Ex. 1006, 5:8–11; Ex. 1002 ¶¶ 52–55. Second, we determine, on the current record, that other prior art of record at least suggests placing a rotary actuator used to steer a crawler track or wheel at a position just above the track or wheel structure. *See* Ex. 1007, 5:14–59, Figs. 4, 5; Ex. 1009, 7:35–58, Fig. 7; Ex. 1011 ¶ 20, Fig. 2.

Third, Petitioner puts forth additional reasons for its proposed modification. Specifically, Petitioner contends that its modification would simplify CIII’s jacking column, as it would not need tubes to rotate relative

to each other and that the modification would provide greater range of motion for CIII's crawler. Pet. 29–30 (relying, in part, on testimony from Dr. Singhose and disclosure in Miller). We determine that this reasoning is also sufficient, at this stage of the proceeding, and that the reasoning is sufficiently supported by rational underpinnings.

We are not persuaded that Rio discourages placing the rotary actuator at the bottom of the column to avoid the accumulation of mechanical devices, as Patent Owner's reliance on Rio's disclosure is misplaced. Rio's disclosure was directed to spacing apart actuator 42 and actuator 44, not a general admonition to not place actuator 44 at the bottom of the jacking column. *See* Ex. 1006, 5:11–16. As Dr. Singhose declares, a person of ordinary skill would have recognized that CIII's hydraulic pivot cylinder is not attached to CIII's jacking column, which means that it would not interfere with Rio's rotary actuator positioned anywhere along the vertical axis of CIII's jacking column. Ex. 1002 ¶ 52.

Next, Patent Owner argues that Petitioner's proposed modification would render CIII inoperable for its intended purpose. Prelim. Resp. 31. Patent Owner argues that the proposed modification “requires a substantial reconstruction and redesign of the *CIII's* machine.” *Id.* Patent Owner continues that “the reconstruction and redesign would render *CIII's* machine inoperable as the machine cannot properly steer and maintain the crawler track as intended, and at the very least change the *CIII* machine's principle operation it was designed to operate with: the smart steer cylinder system.” *Id.*

Patent Owner argues that Rio's actuator cannot “on the fly steer” because Rio's actuator is “relatively small.” Prelim. Resp. 32–33. Patent Owner adds that “the Helac L20 Series Hydraulic Rotary Actuator used in

Rio's design can generate, at best, a drive (steer) torque of 39,000 in-lbs. But to steer a slipform paver machine, such as *CIII*'s machine, there must be around 225,000 in-lbs of available torque." *Id.* at 33 (referencing Ex. 1006, 4:62–66; Ex. 2010, 12; Ex. 2009 (Guntert Decl.) ¶ 15).

Patent Owner also argues that certain of Petitioner's technical documents support a finding that a person having ordinary skill in the art "would not have used a rotary actuator below [*CIII*]'s lifting column." Prelim. Reply 1 (characterizing Patent Owner's argument, which is redacted in the public version of Patent Owner's Preliminary Response at pages 33–34). Patent Owner also argues that Petitioner touts its smart steer cylinder. *Id.* at 35–36. Patent Owner concludes that "Petitioner's analysis is a classic hindsight analysis, as Petitioner gleans from the '749 [p]atent's specification the advantages of the claimed invention and uses these advantages as a roadmap to piece together features from disparate references to construct its combination that loosely resembles the claimed invention, but is inoperative." *Id.* at 37.

Petitioner replies that Patent Owner misapplies Petitioner's technical documents. Prelim. Reply 1. Petitioner adds that *Rio* discloses other types of actuators other than the model of Helac actuator argued by Patent Owner. *Id.* at 1–2. Petitioner concludes that "[i]f anything, [Petitioner's] documents show that a [person having ordinary skill in the art] would have found it obvious to look to multiple types of rotary actuators (including slew drives) when investigating how to rotate a crawler track on a paver." *Id.* at 2–3.

Patent Owner replies that, even considering *Rio*'s other actuators, *Rio* does not disclose any rotary actuator between the jacking column and crawler, but rather, that the actuator should be within the jacking column. Prelim. Sur-reply 2.

In addressing Petitioner's reliance on Miller for disclosing a rotary actuator between a jacking column and crawler, Patent Owner argues that Miller's paver is a conventional paver that was not adopted by the industry because of its drawbacks. Prelim. Sur-reply 4.

We have considered Patent Owner's arguments, but do not find them sufficient, at this stage of the proceeding, to demonstrate a deficiency in Petitioner's position. First, Patent Owner argues that a specific brand and model of actuator identified in Rio would render the CIII inoperable for its intended purpose. However, "[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference." *Facebook, Inc. v. Windy City Innovations, LLC*, 973 F.3d 1321, 1343 (Fed. Cir. 2020).

Second, to the extent that Patent Owner argues that CIII's principle of operation requires employing the smart steer cylinder system, we determine that this argument relies on a too-narrow definition of the principle of operation. Instead, CIII's principle of operation is operating as a slip-form paver. Additionally, we do not give much weight to Patent Owner's declarant's testimony. Patent Owner's declarant is the President and CEO of Patent Owner. Ex. 2009 ¶ 1. Given the declarant's interest in the proceeding, we discount this untested testimony at this stage of the proceeding.

Third, at this stage of the proceeding, on the limited record before us, we determine the evidence from Petitioner's technical documents, upon which Patent Owner relies, is equivocal, or, at least, insufficient at this stage to demonstrate a deficiency in Petitioner's position. This area of inquiry would benefit from further development at trial.

Fourth, we are not persuaded that Petitioner's reasoning for combining CIII's and Rio's teachings is a product of hindsight. As we detailed above, Petitioner has provided reasons and provided supporting evidence for its combination.

Finally, Patent Owner's criticism of Miller does not demonstrate a deficiency in Petitioner's position. The commercial viability of Miller's paving machine as a whole does not negate Petitioner's position that Miller supports a contention that positioning a rotary actuator between a lifting column and crawler was known in the prior art.

b) Rio's teaching of a control system

Petitioner contends that a person having ordinary skill in the art would have sought a solution to CIII's "time-consuming manual adjustments for repositioning the swing legs and crawler tracks." Pet. 31. Petitioner contends that Rio solves this issue through its control system. *Id.* at 32. Petitioner contends that a person having ordinary skill in the art "would have been motivated to implement Rio's rotation sensor 75, pivot sensor 83, and control system in the CIII machine to automate rotation of the swing leg and the crawler track." *Id.* (referencing Ex. 1002 ¶ 60). Petitioner contends that CIII discloses a feedback system similar to Rio and that a person having ordinary skill in the art "would have thus found it obvious to use the feedback system described in Rio to simultaneously control rotation of the swing legs and crawler tracks in the CIII machine." *Id.* (referencing Ex. 1002 ¶ 60).

Petitioner contends that, with the modification that adds Rio's rotary actuator, a person having ordinary skill in the art "would have found it obvious to implement Rio's rotation sensor between the jacking column and crawler track to measure the rotation of the crawler track relative to the

jacking column.” Pet. 32 (referencing Ex. 1006, 6:6–9; Ex. 1002 ¶ 61).

Petitioner concludes that the modification “would have been a routine substitution of one known sensor for another—CIII already discloses using a sensor (i.e., CIII’s feedback pot) to measure rotation of the crawler track relative to the outer cylinder of the jacking column.” *Id.* at 32–33.

Petitioner adds that “it was well known to position a rotation sensor at the bottom of a jacking column and use it to sense rotation of the crawler track.” *Id.* at 33 (referencing Ex. 1007, 5:34–42, 6:12–26. Figs. 4–6; Ex. 1009, 12:23–46; Ex. 1011 ¶ 21; Ex. 1002 ¶ 61).

Petitioner also contends that a person having ordinary skill in the art would have known from Rio’s teachings “to implement pivot sensor 83 either as a rotary encoder associated with the shaft about which CIII’s swing leg pivots or as a linear sensor associated with the hydraulic actuator for pivoting the swing leg.” Pet. 33 (referencing Ex. 1006, 6:22–26; Ex. 1005, 3-17, 3-23; Ex. 1002 ¶ 61). Petitioner explains that these sensors “would allow CIII’s controller to determine the angle of the crawler tracks relative to the frame regardless of the location of the swing leg.” *Id.* (referencing Ex. 1006, 8:31–59, 9:15–21; Ex. 1005, 8-105–06; Ex. 1002 ¶ 61).

Petitioner contends that a person having ordinary skill in the art “would have known that implementing Rio’s sensors and control system in CIII would allow an operator to pivot the swing leg with a hydraulic actuator or other known mechanism such as Rio’s rotary or linear actuator.” Pet. 33. Petitioner adds that such an implementation would “automatically orient the associated crawler track in the paving direction or another desired direction without needing to rotate the swing leg and crawler track in separate steps or recalibrate the crawler tracks.” *Id.* at 34 (referencing Ex. 1005, 2-6, 3-17–18; Ex. 1006, 4:40–44; Ex. 1002 ¶ 62).

Patent Owner does not address Petitioner's reasoning with respect to combining the teachings of Rio's sensor and control system with CIII at this stage of the proceeding.

We determine, on the current record, that Petitioner has sufficiently demonstrated, at this stage of the proceeding, that a person having ordinary skill in the art would have had reasons to combine Rio's teaching directed to its sensors and control system with CIII's control system.

c) Reasonable expectation of success

Petitioner contends that "[i]mplementing Rio's actuators, sensors, and control system on the CIII machine would have constituted nothing more than a combination of well-known prior-art elements according to known methods to yield predictable results." Pet. 34 (referencing Ex. 1002 ¶ 63). Petitioner explains that "Rio's actuators, sensors, and control system already successfully allowed an operator to move a swing leg while orienting the associated crawler track in the travel direction." *Id.* (referencing Ex. 1002 ¶ 63). Petitioner adds that a person having ordinary skill in the art "would have recognized that Rio's actuators, sensors, and control system when implemented on CIII's paver would function in the same manner as they functioned on Rio's machine." *Id.* (referencing Ex. 1002 ¶ 63).

Patent Owner argues that Petitioner has failed to demonstrate a reasonable expectation of success given that CIII would require "significant redesign and reconstruction." Prelim. Resp. 38. Patent Owner repeats that "Petitioner's proposed combination renders *CIII* seemingly inoperative for its intended purpose—being able to steer and maintain the tracks." *Id.*

We have considered Patent Owner's argument, but do not find it sufficient, at this stage of the proceeding, to demonstrate a deficiency in Petitioner's position. "The presence or absence of a reasonable expectation

of success is . . . a question of fact.” *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1366 (Fed. Cir. 2016). “The reasonable expectation of success requirement refers to the likelihood of success in combining references to meet the limitations of the claimed invention.” *Id.* at 1367. We determine, on the current record, that Petitioner has made a sufficient showing, at this stage of the proceeding, that there is a reasonable likelihood that the teachings of Rio and CIII could successfully be combined to meet the limitations of the claimed invention. We base this determination, in part, on Dr. Singhose’s testimony and the similarities between Rio and CIII.

d) Conclusion as to motivation to combine and reasonable expectation of success

In conclusion, we determine that Petitioner has sufficiently demonstrated, at this stage of the proceeding, that a person having ordinary skill in the art would have had reasons to combine Rio’s and CIII’s teachings and would have had a reasonable expectation of success in the combination.

2. Independent claim 1

a) Preamble

The preamble of claim 1 recites “[a] swing leg assembly.” Ex. 1001, 22:40. Petitioner contends, “[i]f the preamble is limiting, CIII discloses a swing-leg assembly.” Pet. 35 (referencing Ex. 1005, 3-14, 3-17; Ex. 1002 ¶ 65).

Upon review of the information in the Petition and corresponding evidence, we determine Petitioner has made a sufficient showing, at this stage of the proceeding, that CIII discloses the subject matter of the preamble of claim 1. In view of this determination, we need not determine, at this stage of the proceeding, whether the preamble is limiting. Patent

Owner does not dispute Petitioner's contention with respect to the preamble at this time.

b) "Swing leg" limitation

Claim 1 also recites "a swing leg configured to mechanically couple with a surface of a module frame." Ex. 1001, 22:41–42 (the "swing leg" limitation of claim 1). Petitioner contends that "CIII discloses a 'mount,' . . . that attaches ('mechanically couple[s]') the swing leg to the surface of the machine frame (i.e., the 'module frame')." Pet. 36 (referencing Ex. 1005, 3-14; *see id.* at 36, 37 (providing an annotated schematic and photograph, respectively, from CIII, identifying the swing leg, module frame, and hinge bracket)).

Upon review of the information in the Petition and corresponding evidence, we determine Petitioner has made a sufficient showing, at this stage of the proceeding, that CIII discloses the subject matter of the "swing leg" limitation of claim 1. Patent Owner does not dispute Petitioner's contention with respect to this limitation at this time.

c) "Crawler track" limitation

Claim 1 also recites "a crawler track." Ex. 1001, 22:43 (the "crawler track" limitation of claim 1). Petitioner contends that "CIII discloses a crawler track." Pet. 37 (referencing Ex. 1005, 2-10, 3-17; Ex. 1002 ¶ 67); *see id.* at 38 (showing annotated photograph from CIII identifying a crawler track)).

Upon review of the information in the Petition and corresponding evidence, we determine Petitioner has made a sufficient showing, at this stage of the proceeding, that CIII discloses a crawler track. Patent Owner does not dispute Petitioner's contention with respect to this limitation at this time.

d) “Jacking column” limitation

Claim 1 also recites “an upright jacking column secured to the swing leg, having a rotary connection between the jacking column and the crawler track permitting relative rotational movements of the crawler track and the jacking column about a first upright axis.” Ex. 1001, 22:44–48 (the “jacking column” limitation of claim 1). Petitioner contends that “CIII discloses an upright jacking column secured to the swing leg,” where the track can be raised by the column to allow the swing leg to pivot. Pet. 38–39 (referencing Ex. 1005, 3-17, 1-10–11, 2-16, 3-12, 3-17; Ex. 1002 ¶ 68). Petitioner adds that “[t]he jacking column includes a lower guide tube that telescopes in and out of the upper guide tube to raise or lower the track or frame.” *Id.* at 39 (referencing Ex. 1005, 3-17, 5-15, 5-35); *see id.* (providing annotated photographs from CIII showing details of the jacking column).

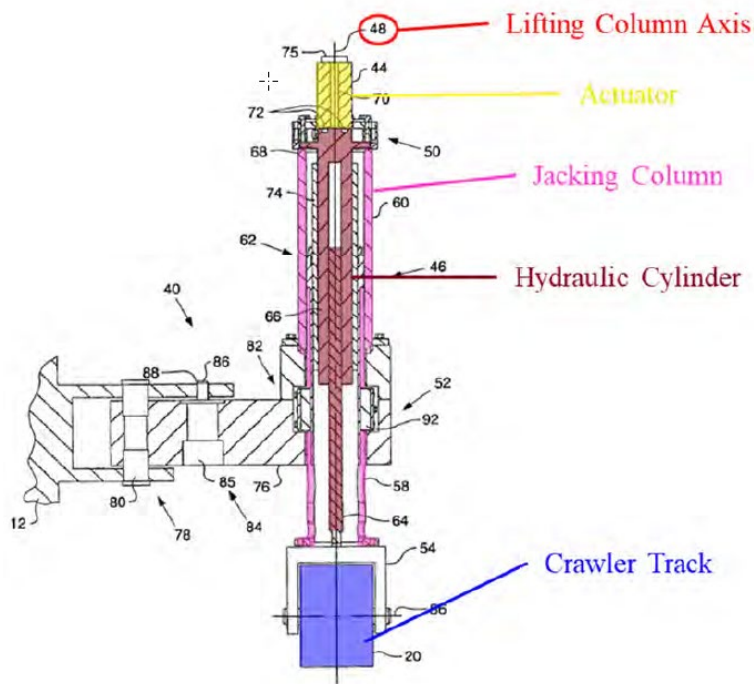
Petitioner contends that CIII discloses a hydraulic steering cylinder that rotates “the track and guide tubes relative to the outer cylinder of the jacking column.” Pet. 40 (referencing Ex. 1005, 5-7, 5-35, 5-37, 8071–72; Ex. 1002 ¶ 69–71); *see id.* at 40–41 (providing annotated photographs from CIII showing steering cylinder and the rotation of a crawler track).

Upon review of the information in the Petition and corresponding evidence, we determine Petitioner has made a sufficient showing, at this stage of the proceeding, that CIII discloses the subject matter of the “jacking column” limitation. Patent Owner does not dispute Petitioner’s contention with respect to this limitation at this time.

e) “Power drive” limitation

Claim 1 also recites “a power drive between the jacking column and the crawler track, configured for translating relative rotational movements between the jacking column and the crawler track.” Ex. 1001, 22:57–60 (the

“power drive” limitation of claim 1)¹². Petitioner identifies CIII’s steering cylinder as a “power drive.” Pet. 40. Additionally, Petitioner identifies Rio’s rotary actuator 44 as a power drive “that rotates the crawler track and portions of lifting column 46 about a vertical lifting column axis 48 (a ‘first upright axis’).” *Id.* at 41 (referencing Ex. 1006, 4:56–5:7, 5:32–34). We reproduce Petitioner’s annotated version of Rio’s Figure 2, below.



Pet. 42. Figure 2 depicts a longitudinal section of a portion of Rio’s cold planer, showing a swing arm, lifting, or jacking, column, and ground engaging unit. Ex. 1006, 3:28–30, 3:62–64, 4:51–53, 6:12–15. Petitioner’s annotations identify the crawler track (ground engaging unit, in purple), hydraulic cylinder (in maroon), jacking column (in pink), actuator (in yellow), and lifting column axis (in red).

¹² As listed in claim 1, the “power drive” limitation is after limitations reciting first and second angular transducers. *See* Ex. 1001, 22:49–60. We discuss the power drive limitation here, because of the limitation’s relationship to the “crawler track” and “jacking column” limitations.

Petitioner proposes three modifications to satisfy the “power drive” limitation. First, Petitioner proposes to retain CIII’s steering cylinder and combine that configuration with Rio’s teachings of sensors and a control system (discussed below in connection with the final three limitations of claim 1). Pet. 42. Petitioner contends that “CIII’s steering cylinder attaches to the upper guide tube below the jacking column’s outer cylinder and is thus ‘between the jacking column and the crawler track.’” *Id.* at 42–43 (referencing Ex. 1002 ¶ 73).

Patent Owner argues that CIII’s steering cylinder is located on the jacking column, not physically between the column and crawler track as required by the claim. Prelim. Resp. 23–25 (referencing Ex. 2008, 16); *see also id.* at 24 (providing an annotated image of the machine associated with CIII and identifying the location of the steering cylinder). We agree. Based on our preliminary construction of the power drive limitation, we construe the claim to require the power drive to be physically located between the jacking column and crawler track.

Second, Petitioner modifies CIII’s jacking column to replace the steering cylinder with a rotary actuator, as taught by Rio, and locate the actuator at the top of CIII’s outer cylinder. Pet. 43.

Patent Owner again argues that locating a rotary actuator at the top portion of the jacking column fails to satisfy the claim limitation as properly construed. Prelim. Resp. 26. We agree that Petitioner’s modification that positions Rio’s rotary actuator at the top of the jacking column does not satisfy our preliminary construction of the power drive limitation—the construction requires the drive to be physically between the column and crawler track.

Third, Petitioner contends that “it would have been obvious to modify CIII’s leg assembly by positioning Rio’s rotary actuator 44 at the bottom of the jacking column and on top of the crawler track . . . , and using that power drive in combination with Rio’s pivot sensor and coordinated control system.” Pet. 44. Petitioner explains that, “[u]nder this design, . . . the entire jacking column would be fixed rotationally, and the rotary drive would be coupled between the bottom of the lower guide tube and the top of the crawler track and would rotate the crawler track relative to the jacking column.” *Id.* (referencing Ex. 1002 ¶ 74). Petitioner adds that locating a rotary actuator at the bottom of a lifting column to rotate a crawler track was known in the art and that Rio suggests the position. *Id.* (referencing (Ex. 1007, 5:14–59, Figs. 4–5; Ex. 1009, 7:35–58, Fig. 7; Ex. 1006, 5:8–11; Ex. 1002 ¶¶ 52, 75).

Patent Owner argues that Rio prefers the actuator at the top of a lifting column and away from the bottom of the lifting column, which has other mechanical components. Prelim. Resp. 26.

We have considered Patent Owner’s argument, but do not find it sufficient, at this stage of the proceeding, to demonstrate a deficiency in Petitioner’s position. That is, Petitioner has made an adequate showing, at this stage of the proceeding, that it would have been obvious to position a rotary actuator at the bottom of CIII’s lifting column, such that it is physically located between the lifting column and crawler track.

As we described above, Petitioner has made a sufficient showing that a person having ordinary skill in the art would have had reason to combine Rio’s teaching of a rotary actuator with CIII’s lifting column/crawler track arrangement. We determine, on the current record, that Rio suggests locating along the axis of the lifting column and does not limit the actuator

to the top. Patent Owner overstates Rio's disclosure as to locating actuator 44 away from other mechanical devices. Rio's disclosure states that actuator 44 should be spaced apart from actuator 42 (which moves the swing arm) to avoid an accumulation of mechanical devices. The actuator that moves the CIII swing arm is not located at the bottom of its lifting column. *See* Ex. 1002 ¶ 52. Also, lower portion 52 of Rio's lifting column is at a point where the column intersects the swing arm, not at the bottom of the lifting column. *See* Ex. 1006, Fig. 2. Indeed, Patent Owner does not identify any other mechanical devices that would be at the bottom of CIII's lifting column, as modified.

We also determine that the prior art of record suggests locating an actuator used to rotate a crawler track or wheel at the bottom of a lifting column or top of the crawler track or wheel. *See* Ex. 1007, 3:31–5:52, Figs. 4, 5; Ex. 1009, 2:51–53, 7:36–60, Fig. 7; Ex. 1011 ¶ 20, Fig. 2; Ex. 1002 ¶¶ 49–50.

Accordingly, upon review of the information in the Petition and corresponding evidence, we determine Petitioner has made a sufficient showing, at this stage of the proceeding, that CIII, as modified by Rio, discloses the subject matter of the “power drive” limitation.

f) “First angular transducer” limitation

Claim 1 also recites “a first angular position transducer between the jacking column and the crawler track, configured to emit a first signal which is indicative of an angular orientation of the crawler track relative to the jacking column.” Ex. 1001, 22:49–52 (the “first angular transducer” limitation of claim 1). Petitioner contends that Rio's rotation sensor 75, which is associated with rotary actuator 44, corresponds to the recited first angular transducer. Pet. 45 (referencing Ex. 1006, 6:6–11; Ex. 1002 ¶¶ 77–

78). Petitioner explains that “[s]ensor 75 generates a rotational position signal 124 ‘indicating the instantaneous rotation angle’ of ground engaging unit 20 (‘crawler track’) that goes to controller 32.” *Id.* (referencing Ex. 1006, 7:23–27, 8:38–39). Petitioner also contends that CIII has a sensor corresponding to the first angular position transducer. *Id.* at 47 (referencing Ex. 1005, 8-106, 8-110; Ex. 1002 ¶ 79).

Upon review of the information in the Petition and corresponding evidence, we determine Petitioner has made a sufficient showing, at this stage of the proceeding, that CIII discloses the subject matter of the “first angular transducer” limitation. Patent Owner does not dispute Petitioner’s contention with respect to this limitation at this time.

g) “Second angular transducer” limitation

Claim 1 also recites “a second angular position transducer between the swing leg and the module frame, configured to emit a second signal which is indicative of an angular orientation of the swing leg relative to the module frame.” Ex. 1001, 22:53–56 (the “second angular transducer” limitation of claim 1). Petitioner contends that Rio’s pivot sensor 83 corresponds to the recited second angular transducer. Pet. 48 (referencing Ex. 1006, 6:23–26, 7:19–23, 8:32–34, Fig. 3; Ex. 1002 ¶¶ 81–82).

Upon review of the information in the Petition and corresponding evidence, we determine Petitioner has made a sufficient showing, at this stage of the proceeding, that CIII discloses the subject matter of the “second angular transducer” limitation. Patent Owner does not dispute Petitioner’s contention with respect to this limitation at this time.

h) “Processor” limitation

Finally, claim 1 recites “a processor operable to receive the first and second signals and configured to emit a control signal for activating the

power drive and thereby rotationally move the crawler track relative to the jacking column to maintain an orientation of the crawler track in response to changes of the first signal caused by pivotal motions of the swing leg about an upright pivot shaft.” Ex. 1001, 22:61–67 (the “processor” limitation of claim 1). Petitioner contends that “Rio discloses a controller 32 adapted to coordinate actuation of actuators 42, 44.” Pet. 50 (Ex. 1006, 4:18–20, 4:47–50). Petitioner adds that controller 32, the recited processor, receives pivot position signal 122 and rotational position signal 124, the recited first and second signals. *Id.* (referencing Ex. 1006, 6:65–66, 7:11–13; Ex. 1002 ¶ 84).

Petitioner explains that controller 32 actuates first actuator 42 to move swing arm 76 and pivot sensor 83 tracks the movement. Pet. 50–51 (referencing Ex. 1006, 8:31–34; Ex. 1002 ¶ 85). Petitioner adds that controller 32 uses signals 122, 124 to actuate second actuator 44 to rotate a crawler track to maintain the track in the same running direction. *Id.* at 51 (referencing Ex. 1006, 8:34–47).

Petitioner contends that “[i]t would have been obvious to implement Rio’s control system so that CIII’s controller—a processor already equipped to receive signals from sensors—receives the first and second signals and emits the claimed ‘control signal.’” Pet. 52. We address Petitioner’s reasons for this modification above.

Upon review of the information in the Petition and corresponding evidence, we determine Petitioner has made a sufficient showing, at this stage of the proceeding, that CIII discloses the subject matter of the “processor” limitation. Patent Owner does not dispute Petitioner’s contention with respect to this limitation at this time.

i) Secondary considerations

We next turn to Patent Owner’ evidence of secondary considerations. Patent Owner contends that “[t]he ’749 [p]atent’s claimed invention has received substantial commercial success, praise, as well as been copied by competitors” and that “[t]his evidence on its own is enough to overcome Petitioner’s challenges to the obviousness of the ’749 [p]atent.” Prelim. Resp. 56.

As an initial matter, “[i]n order to accord substantial weight to secondary considerations in an obviousness analysis, the evidence of secondary considerations must have a nexus to the claims, i.e., there must be a legally and factually sufficient connection between the evidence and the patented invention.” *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019). “[A] patentee is entitled to a rebuttable presumption of nexus between the asserted evidence of secondary considerations and a patent claim if the patentee shows that the asserted evidence is tied to a specific product and that the product ‘is the invention disclosed and claimed.’” *Id.* Applying *Fox Factory*, the Board uses a two-step analysis in evaluating nexus between the claimed invention and the evidence of secondary considerations. *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 33 at 33 (PTAB Jan. 24, 2020) (precedential). We first consider whether the patent owner has demonstrated “that its products are coextensive (or nearly coextensive) with the challenged claims,” resulting in a rebuttable presumption of nexus. *Id.* at 33. If not, that “does not end the inquiry into secondary considerations”; “the patent owner is still afforded an opportunity to prove nexus by showing that the evidence of secondary considerations is the ‘direct result of the unique characteristics of the claimed invention.’” *Id.* (quoting *Fox Factory*, 944 F.3d at 1373–75).

Patent Owner contends that its “SmartLeg/AccuSteer Slipform” technology, part of SmartLeg/AccuSteer Slipform paver machines, “embody and essentially are the ’749 [p]atents’ claimed invention.” Prelim. Resp. 56–57. We have reviewed Patent Owner’s claim chart on how its slipform paver machine allegedly satisfy the elements of claims 1, 2, 4, and 6. *See id.* at 57–62. We note that Patent Owner does not provide any evidentiary support for this claim chart. Notwithstanding this lack of evidence, for the purposes of this Decision *only*, we accept that SmartLeg/AccuSteer Slipform paver machines are co-extensive or nearly co-extensive with the claimed invention.¹³

First, Patent Owner alleges that the claimed invention satisfies a long felt, yet unresolved need. Prelim. Resp. 65; *see also id.* at 61–65 (discussing how prior art pavers had to manually reposition swing legs and crawler tracks and how Patent Owner solved the problem). Evidence of a long felt but unresolved need tends to show nonobviousness because it is reasonable to infer that the need would have not persisted had the solution been obvious—however, “[a]bsent a showing of long-felt need or the failure of others, the mere passage of time without the claimed invention is not evidence of nonobviousness.” *See Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1325 (Fed. Cir. 2004). Patent Owner’s narrative may demonstrate that Patent Owner recognized and solved a problem with paver machines, but Patent Owner does not offer evidence that others saw the

¹³ We note, however, that evidence in the record indicates that Patent Owner’s pavers may also include additional, patented technology, not covered by the ’749 patent. *See, e.g.*, Ex. 2014, 1, 2 (discussing the S600’s patented telescopic paving kit end sections and patented tractor frame width change system).

inability to change the orientation of a swing leg and crawler on the fly as a long felt need for which others failed to resolve.

Next, Patent Owner contends that it “has achieved considerable commercial success due to its SmartLeg / AccuSteer technology.” Prelim. Resp. 67. Patent Owner contends that customers abandoned their pavers before the end of life for the equipment and purchased Patent Owner’s paver. *Id.* at 68–69. Patent Owner also alleges increases in sales. *Id.* at 68.

“When a patentee can demonstrate commercial success, usually shown by significant sales in a relevant market, and that the successful product is the invention disclosed and claimed in the patent, it is presumed that the commercial success is due to the patented invention.” *Galderma Labs., L.P. v. Tolmar, Inc.*, 737 F.3d 731, 740 (Fed. Cir. 2013). On the current record, Patent Owner offers no persuasive evidence of significant sales or market share to support a finding of commercial success. Patent Owner’s evidentiary support is almost exclusively declaration testimony from Mr. Guntert. At this stage of the proceeding, we give this untested evidence little weight. First, as we discuss above, Mr. Guntert is the President and CEO of Patent Owner, introducing potential bias in his testimony. Second, Mr. Guntert does not support much of his testimony on commercial success with underlying evidence in the record.

Next, Patent Owner contends that its SmartLeg/AccuSteer Slipform paver machines are the subject of industry praise. Prelim. Resp. 69–71. Patent Owner directs us to industry publications that “tout[] the benefits that the SmartLeg / AccuSteer technology has brought to the paving industry.” *Id.* at 70 (referencing Exs. 2014, 2015, 2016, 2017). Patent Owner also contends that the “SmartLeg / AccuSteer Slipform Paver Machine was praised because it allowed the DFWC [Dallas/Fort Worth Connector] team

to avoid delays as it significantly reduced time spent changing the paving width.” *Id.* at 70. Patent Owner adds that the patented technology “contributed to DFWC’s project success as it allowed for quick tractor width changes, paving in narrow confines thus reducing hand pours, quick maneuvering on site and saved time loading and unloading.” *Id.*

Praise from industry participants, especially competitors, is probative as to obviousness because such participants “are not likely to praise an obvious advance over the known art. Thus, if there is evidence of industry praise of the claimed invention in the record, it weighs in favor of the nonobviousness of the claimed invention.” *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1053 (Fed. Cir. 2016). We recognize that these articles do positively mention the SmartLeg and AccuSteer technologies. We note, however, that the articles in Exhibits 2014 and 2015 are very similar, suggesting that they may be more the product of marketing, rather than praise from industry participants or competitors.

The other exhibits mention SmartLeg and AccuSteer technologies, but fall short of offering praise for the technology. *See, e.g.*, Ex. 2016 (“To optimise paver manoeuvrability at the site, Koss Construction equipped its S600 paver with G&Z’s available AccuSteer and SmartLeg systems. These allow the operator to manoeuvre the machine around track-line obstacles on the fly without having to stop for bolster swing-leg mechanical adjustment or steering transducer resetting.”); Ex. 2017 (discussing the SmartLeg/AccuSteer technology and stating “the contractor can maneuver around track line obstacles such as fire hydrants and runway lights without stopping for a bolster adjustment”).

With respect to the Dallas/Fort Worth Connector project, although Exhibit 2018 mentions the use of Patent Owner’s paver, the article seems to

tout the pavement design, rather than Patent Owner's paving machine. *See* Ex. 2018, 2.

Finally, Patent Owner contends that Petitioner and Wirtgen America, Inc. copied the patented technology. Prelim. Resp. 71–73. Patent Owner compares “similarities” of its paver with pavers from Petitioner and Wirtgen. *Id.*

The fact that a competitor copies technology suggests it would not have been obvious. *See Windsurfing Int'l, Inc. v. AMF, Inc.*, 782 F.2d 995, 1000 (Fed. Cir. 1986) (“[C]opying the claimed invention, rather than one within the public domain, is indicative of non-obviousness.”).

Our [reviewing court's] case law holds that copying requires evidence of efforts to replicate a specific product, which may be demonstrated through internal company documents, direct evidence such as disassembling a patented prototype, photographing its features, and using the photograph as a blueprint to build a replica, or access to the patented product combined with substantial similarity to the patented product.

Wyers v. Master Lock Co., 616 F.3d 1231, 1246 (Fed. Cir. 2010). Patent Owner alleges access and similarities in products. This evidence, although untested at trial, does support an inference of copying.

In conclusion, we have considered Patent Owner's secondary consideration evidence, but on the current record and at this stage of the proceeding, we find Patent Owner's arguments unpersuasive for the reasons discussed above. Also, the issue of secondary considerations is highly fact-specific. At this stage, the record on this issue is incomplete, and Petitioner has not had the opportunity to respond to the specific arguments raised by Patent Owner. We will consider the full record as to objective indicia as developed during trial as part of our analysis in the final written decision, where we make the ultimate decision on obviousness.

j) Conclusion

For the reasons discussed above, we determine, on the current record, that the information presented in the Petition shows a reasonable likelihood that claim 1 is unpatentable under 35 U.S.C. § 103 over CIII and Rio.

3. Independent claim 17

Independent claim 17 differs from claim 1 in that it further recites additional components of a paving machine, including a “module frame” and a “two or more swing leg assemblies,” with each assembly including the elements recited in claim 1. Ex. 1001, 23:54–24:33. Petitioner relies on similar contentions as made for claim 1 in asserting that claim 17 is unpatentable over CIII and Rio, and relies on CIII’s four-leg configuration. *See* Pet. 65–75.

We have reviewed Petitioner’s contentions with respect to independent claim 17 and determine, on the current record, that the information presented in the Petition shows a reasonable likelihood that claim 17 is unpatentable under 35 U.S.C. § 103 over CIII and Rio. Patent Owner does not make any additional arguments directed uniquely to claim 17 at this time.

4. Dependent claims 2–11, 13–16, 19, and 20

Dependent claims 2–11, 13–16, 19, and 20 depend, directly or indirectly, from independent claims 1 or 17. We have reviewed Petitioner’s contentions with respect to these dependent claims and determine, on the current record, that the information presented in the Petition shows a reasonable likelihood that dependent claims 2–11, 13–16, 19, and 20 are unpatentable under 35 U.S.C. § 103 over CIII and Rio. Patent Owner does not make any additional arguments directed to these dependent claims at this time.

E. Grounds 2 and 5: Claim 18 as unpatentable over CIII, Rio, and Smolders (Ground 2), and Claims 11 and 12 as unpatentable over CIII, Rio, and Widdrington

Petitioner contends that claim 18, which depends directly from claim 17, is unpatentable over CIII, Rio, and Smolders. Pet. 75–80. Petitioner also contends that claims 11 and 12, which depend directly from claim 1, are unpatentable over CIII, Rio, and Widdrington. Pet. 106–110.

We have reviewed Petitioner’s contentions with respect to these grounds and determine, on the current record, that the information presented in the Petition shows a reasonable likelihood that dependent claim 18 is unpatentable under 35 U.S.C. § 103 over CIII, Rio, and Smolders. Also, we determine, on the current record, that the information presented in the Petition shows a reasonable likelihood that dependent claims 11 and 12 are unpatentable under 35 U.S.C. § 103 over CIII, Rio, and Widdrington. Patent Owner does not make any additional arguments directed to these dependent claims at this time. *See* Prelim. Resp. 39, 54.

F. Grounds 3, 4, and 6: Littman grounds

Petitioner contends that claims 1–10, 13–17, 19, and 20 are unpatentable under 35 U.S.C. § 103 over CIII and Littman. Pet. 5, 84–103, 104–105 (Ground 3). Petitioner also contends that claim 18 is unpatentable under 35 U.S.C. 103 over CIII, Littman, and Smolders (Ground 4), and that claims 11 and 12 are unpatentable under 35 U.S.C. § 103 over CIII, Littman, and Widdrington (Ground 6). Pet. 5, 103–104, 106–110.

The U.S. Supreme Court, in *SAS Institute, Inc. v. Iancu*, 138 S. Ct. 1348 (2018), held that an *inter partes* review must institute on all challenged claims or no challenged claims. The Patent Office has further determined that, if instituting a review in an AIA trial proceeding, the Board will

institute on all challenged claims *and all grounds*. Consolidated Trial Practice Guide 64, available at <https://www.uspto.gov/TrialPracticeGuideConsolidated> (Nov. 2019); *see also PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (“Equal treatment of claims and grounds for institution purposes has pervasive support in *SAS*.”). “If a trial is instituted, the Board generally will provide analysis of the strengths and weaknesses of all challenges in the petition in order to provide guidance to the parties for the upcoming trial.” Consolidated Trial Practice Guide 64.

Having determine that Petitioner had demonstrated a reasonable likelihood of success with the Rio-based, grounds, we provide analysis of the strengths and weaknesses of the Littman grounds, below.

First, Patent Owner argues that Littman is not analogous art. Prelim. Resp. 46. “To be considered within the prior art for purposes of the obviousness analysis, a reference must be analogous,” which is a question of fact. *Circuit Check Inc. v. QXQ Inc.*, 795 F.3d 1331, 1335 (Fed. Cir. 2015). Two separate tests define the scope of analogous prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor’s endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved. *Id.*

Patent Owner argues that the field of endeavor for the ’749 patent is automatically adjusting swing leg assemblies for concrete slip form pavers. Prelim. Resp. 47. Patent Owner argues that Littman is “far afield” of this field of endeavor. *Id.* at 48. Patent Owner adds that even if the field of endeavor of the ’749 patent was broadened to construction machinery,

Littman would still not be in the field, as Littman is in the field of stabilizing a work platform, not road construction or paving roads. *Id.*

Patent Owner also argues that Littman is not reasonably pertinent to the particular problem with which the inventors of the '749 patent were involved. Prelim. Resp. 50. Patent Owner argues that the inventors of the '749 patent were concerned with allowing for swing leg adjustments on a paver to be made on the fly. *Id.* Patent Owner argues, in contrast, Littman is directed to stabilizing a work platform.

We determine, on the current record, that Littman is at least reasonably pertinent to a problem with which the inventors were involved.¹⁴ In order for a reference to be “reasonably pertinent” to the problem, it must “logically [] have commended itself to an inventor’s attention in considering his problem.” *In re Icon Health & Fitness, Inc.*, 496 F.3d 1374, 1379–80 (Fed. Cir. 2007); *see also KSR Int’l Co.*, 550 U.S. at 417 (“When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one.”). We are to construe the scope of analogous art broadly. *Wyers*, 616 F.3d at 1238. Here, Littman is concerned with a particular problem of ensuring that the drive means on the ends of each leg (for example, a wheel or crawler track) move and position the prime mover regardless of the position or extension of the stabilizer legs. Ex. 1007, 4:19–21, 7:60–60. Like the inventors of the '749 patent, who were involved in the problem of coordinating the position of each crawler track as a swing leg rotates, Littman also coordinates the orientation of its drive means regardless of how its legs move relative to

¹⁴ We make no determination, at this time, whether Littman is in the same field of endeavor as the '749 patent.

body 20. *Id.*; *see also id.* at 8:42–9:13 (describing how Littman’s control system coordinates the rotation of its drive means based on the orientation of a stabilizer leg).

Second, Patent Owner appears to argue that Littman does not disclose a power drive located between the jacking column and crawler track, based on finding made in the parallel litigation. Prelim. Resp. 40. Patent Owner argues that Littman’s rotary actuator 122 is within the second section of Littman’s jacking column. *Id.* at 40–41.

Patent Owner also argues that Littman’s wheel rotates relative to outer section 82, not second section 70, the identified jacking column. Prelim. Resp. 40. Patent Owner adds that Littman’s leg is generally extended, such that the rotary actuator would not rotate the wheel or crawler track about an upright axis created by the jacking column. *Id.* at 42–43.

We have considered Patent Owner’s arguments, but do not find them sufficient, at this stage of the proceeding, to demonstrate a deficiency in Petitioner’s position. Patent Owner’s arguments are directed to Littman individually and ignores Petitioner’s proposed combination. “A finding of obviousness, however, cannot be overcome ‘by attacking references individually where the rejection is based upon the teachings of a combination of references.’” *Bradium Techs. LLC v. Iancu*, 923 F.3d 1032, 1050 (Fed. Cir. 2019).

We understand Petitioner’s position to be that “[i]t would have been obvious to use Littman’s rotary actuator instead of CIII’s steering cylinder to rotate [CIII’s] crawler track.” Pet. 88. Further, Petitioner contends that “[i]t would have been obvious in view of Littman to modify CIII’s jacking column by rotationally fixing its guide tubes to the outer cylinder and adding Littman’s rotary actuator between CIII’s lower guide tube and the crawler

track.” *Id.* at 89. In this way, the rotary actuator would be between CIII’s jacking column and crawler track and the actuator would rotate the crawler track about the upright axis created by the jacking column.

Third, Patent Owner argues that Littman does not have a processor. Prelim. Resp. 43–44. We agree with Patent Owner that, to the extent Petitioner relies on a construction of the term “processor” to encompass the control system disclosed in Littman, this reliance may be a weakness in Petitioner’s position. *See* Pet. 98 (“Littman’s synchro transmitter 174, synchros 95, demodulators, and amplifiers correspond to the claimed processor.”). We note, however, that Petitioner further contends that a person having ordinary skill in the art “would have understood that these components working together are a processor, and it would have been obvious to place their collective functionality on a single modern processor (e.g., the processor in CIII).” That is, CIII discloses the recited processor structure, with the functionality disclosed by Littman programmed on the processor. *See id.* (“The resulting processor would have been configured to operate as described in Littman.”).

Finally, Patent Owner argues that Petitioner has not demonstrated that a person having ordinary skill in the art would have been motivated to make Petitioner’s proposed combination. Prelim. Resp. 51. Patent Owner argues that, like Rio’s actuator, Littman’s actuator “has size and torque limitations.” *Id.* Patent Owner adds that the rotary actuator in *Littman* is located within the alleged jacking column and not physically between the jacking column and the crawler, exacerbating the size issues associated with rotary actuators.” *Id.* at 52.

We have considered Patent Owner’s argument, but do not find it sufficient, at this stage of the proceeding, to demonstrate a deficiency in

Petitioner's position. As we discussed above in connection with our analysis of Ground 1, the current record does not include any persuasive evidence against employing a rotary actuator to rotate a crawler track.

Next, Patent Owner argues that a person having ordinary skill in the art would not use Littman's rudimentary control system in CIII, as that system represents a step backwards. Prelim. Resp. 52. Patent Owner argues that CIII's processor allows for individual steering control and Littman does not. *Id.* at 53. We have reviewed Petitioner's contentions and Patent Owner's counter arguments. Because we institute trial on all Challenged Claims and grounds, we will evaluate Petitioner's positions on a complete record. We determine that the issues presented by Petitioner and Patent Owner would benefit from a full trial record.

IV. CONCLUSION

After considering all the evidence and arguments presently before us, we determine Petitioner has established a reasonable likelihood that it would prevail with respect to at least one of the Challenged Claims. Accordingly, we institute an *inter partes* review on all Challenged Claims and grounds.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review is instituted as to claims 1–20 of U.S. Patent No. 10,029,749 B2;

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, which commences on the entry date of this Order;

FURTHER ORDERED that, no later than ten days after the issuance of this decision, the parties may file: (1) a joint motion to seal, explaining the extent to which this decision should remain under seal, and (2) if appropriate, a redacted version of this decision that can be made publicly available;

FURTHER ORDERED that this decision shall remain under seal until any joint motion to seal this decision is resolved; and

FURTHER ORDERED that this decision shall be made public if the parties do not timely file the motion described above.

IPR2020-01698
Patent 10,029,749 B2

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