

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

WESTINGHOUSE AIR BRAKE TECHNOLOGIES CORPORATION,
Petitioner,

v.

SIEMENS MOBILITY, INC.,
Patent Owner.

IPR2017-02104
Patent 7,079,926 B2

Before KRISTEN L. DROESCH, MEREDITH C. PETRAVICK, and
TIMOTHY J. GOODSON, *Administrative Patent Judges*.

PETRAVICK, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
38 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

A. Background

Westinghouse Air Brake Technologies Corporation (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1–6, 20, and 21 of U.S. Patent No. 7,079,926 B2 (Ex. 1001, “the ’926 patent”) pursuant to 35 U.S.C. §§ 311–319. Paper 1 (“Pet.”). The Petition challenges the claims on the following grounds:

No.	Ground	Claims	Prior Art
1	§ 103(a)	1 and 20	Burns ¹
2	§ 103(a)	1–6, 20, and 21	Burns and Nickles ²
3	§ 103(a)	1 and 20	Judge ³
4	§ 103(a)	1–6, 20, and 21	Judge and Nickles

See Pet. 15.

We initially instituted an *inter partes* review on all claims challenged in the Petition, but on only a subset of the asserted grounds. See Paper 9 (“Dec. on Inst.”). Specifically, we determined based on the preliminary record that Petitioner had demonstrated a reasonable likelihood of prevailing in all of its challenges except for the challenges to claims 1–6, 20, and 21 in ground 4. In accordance with the Board’s practice at that time, we instituted review only on the challenges for which Petitioner showed a reasonable

¹ Burns et al., *Safety and Productivity Improvement of Railroad Operations by Advanced Train Control Systems*, Proceedings, Technical Papers Presented at the 1989 IEEE/ASME Joint Railroad Conference 1989 (“Burns”) (Ex. 1006).

² U.S. Patent No. 6,144,901 (issued Nov. 7, 2000) (“Nickles”) (Ex. 1007).

³ *BNSF/UP PTS pilot advances in Northwest*, Progressive Railroading, 1996 pp. 49–53 (“Judge”) (Ex. 1011).

likelihood of prevailing. Subsequently, pursuant to *SAS Institute, Inc. v. Iancu*, 138 S. Ct. 1348, 1355–57 (2018), we modified our institution decision to institute review of all grounds and claims presented in the Petition. Paper 13; *see also* Paper 14 (adjusting case schedule in light of modification to institute on all grounds presented in the Petition).

After institution, Siemens Mobility, Inc. (“Patent Owner”) filed a Patent Owner’s Response to the Petition (Paper 18, “PO. Resp.”), and Petitioner filed a Petitioner’s Reply (Paper 23, “Pet. Reply.”). Patent Owner filed a Motion to Exclude (Ex. 1002), which we address in Section III. An oral hearing was held on November 13, 2018 and a transcript appears in the record. Paper 32 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. Petitioner bears the burden of proving unpatentability of the challenged claims, and the burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must prove unpatentability by a preponderance of the evidence. *See* 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

For the reasons that follow, we determine that Petitioner fails to show by a preponderance of the evidence that claims 1–6, 20, and 21 of the ’926 patent are unpatentable. *See* 35 U.S.C. § 316(e).

B. Related Proceedings

The parties indicate that the ’926 patent is the subject of *Siemens Industry, Inc. v. Westinghouse Air Brake Technologies. Corp.*, Case No.

1:16-cv-00284 in the United States District Court for the District of Delaware. Paper 5, viii; Paper 7, 2.

The '926 patent is related to U.S. Patent No. 7,092,801 B2, which is the subject of IPR2017-00981, to U.S. Patent No. 6,978,195, which is the subject of IPR2017-01454, and to U.S. Patent No. 7,200,471, which is the subject of IPR207-01821. *Id.*

C. The '926 Patent

The '926 patent is titled “Train Control System and Method of Controlling a Train or Trains” and issued on July 18, 2006. Ex. 1001, (45), (54). The '926 patent relates to the automatic control of trains. *Id.* at 1:15.

The '926 patent discusses known systems for controlling trains. *See id.* at 1:25–3:38, 9:65–10:3. For example, the '926 patent discloses that traditional methods for controlling trains use track warrants, which are permissions to occupy a given section of track (i.e., a block). *Id.* at 1:25–45. In the traditional method, a dispatcher issues a train warrant verbally to the train conductor or engineer. *Id.* at 1:29–33. The '926 patent discloses that the system is “subject to errors which can be disastrous” because it relies upon human beings. *Id.* at 1:46–49; *see id.* at 1:61–62. The '926 patent teaches that it was known to increase the safety of trains by “automat[ing] various aspects of train operation” and that “efforts at automation have been made.” *Id.* at 1:21–24, 221; *see also id.* at 3:30–3:38. For example, the '926 patent discloses that “systems, such as the Advanced Train Control [‘ATC’] System proposed by Rockwell International, will automatically apply the brakes if a track warrant is about to be exceeded.” *Id.* at 2:55–58. The '926 patent discloses that ATC systems have been combined with Positive Train

Stop (“PTS”) systems, which will anticipate signaling and stop or slow a train. *Id.* at 2:64–65. For example, the system will stop a train automatically before it runs through a stop signal. *Id.* at 2:67–3:5. The ’926 patent further discloses that “some of the descriptions of PTS systems the inventors hereof have seen in trade publications apparently indicate that a train will not be allowed to move until it has received a track warrant from a dispatcher (i.e., a track warrant or track authority).” *Id.* at 9:65–10:3.

The ’926 patent discloses “automat[ing] various aspects of train operation” can increase safety of train operations by preventing collisions caused by human error. *Id.* at 1:19–24; *see id.* at 1:46–49, 1:59–60, 2:21, 3:30–38. The ’926 patent states “[i]n addition to the performance and safety issues . . . , vandalism is becoming an increasing concern of train operators” and discloses that “[o]ne form of vandalism is the unauthorized moving of trains.” *Id.* at 1:39–42. “Unauthorized movement of a train, whether on a main line, in a train yard, or on some other section of track, can cause much damage even if a stop signal is not violated.” *Id.* at 3:47–49.

The ’926 patent purports to solve these problems by “not allow[ing] the train to move at all, whether the train is on the main line or in a train yard, until an appropriate authority is received.” *Id.* at 4:7–14.

D. Illustrative Claim

Of the challenged claims, claims 1 and 20 are independent. Claim 1 recites a system, and claim 20 recites a corresponding method. Claims 2–6 depend from claim 1, and claim 21 depends from claim 20. Claim 1 is illustrative and reproduced below.

1. A system for controlling a train, the system comprising:
 - a control unit;
 - a first positioning system connected to the control unit;
 - and
 - a communications module connected to the control unit;wherein the control unit is configured to perform the steps of
 - accepting at least one authorization from a dispatcher, the authorization defining a boundary within which a train is authorized to move;
 - preventing the train from moving from a current location if the current location is not within a boundary for an accepted authorization;
 - monitoring a position of the train reported by the positioning system; and
 - stopping the train before the train moved outside the boundary unless authorization to move outside the boundary is received.

Ex. 1001, 12:43–61.

II. ANALYSIS

A. Claim Construction

Under the version of our rules applicable to this *inter partes* review,⁴ the Board interprets claim terms in an unexpired patent according to the broadest reasonable construction in light of the specification of the patent in

⁴ The claim construction standard for *inter partes* reviews has changed for proceedings in which the petition was filed on or after November 13, 2018. See Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340 (Oct. 11, 2018) (to be codified at 37 C.F.R. pt. 42).

which they appear. 37 C.F.R. § 42.100(b) (2017); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation approach). Under that standard, and absent any special definitions, we give claim terms their ordinary and customary meaning, as they would be understood by one of ordinary skill in the art at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

While the broadest reasonable interpretation standard is broad, the Board cannot interpret the words of a claim without regard for the full claim language and the written description. *See Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016); *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015). It is the “use of the words in the context of the written description and customarily by those of skill in the relevant art that accurately reflects both the ‘ordinary’ and ‘customary’ meaning of the terms in the claims.” *Ferguson Beauregard/Logic Controls, Div. of Dover Res., Inc. v. Mega Sys., LLC*, 350 F.3d 1327, 1338 (Fed. Cir. 2003).

For the purposes of this Decision, we determine that only “stopping the train” and “preventing the train from moving” need explicit claim constructions in order to resolve the issues before us. *See, e.g., Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) (“[C]laim terms need only be construed ‘to the extent necessary to resolve the controversy.’”) (quotation omitted).

Claim 1, for example, recites a control unit that is configured to perform the steps of “preventing the train from moving from a current location if the current location is not within a boundary for an accepted authorization” and “stopping the train before the train moves outside the

boundary unless authorization to move outside the boundary is received.”
Ex. 1001, 12:44–61.

Patent Owner contends that “‘*stopping the train* before the train moves outside the boundary . . .’ refers to slowing down of a moving train until it is not moving, whereas ‘*preventing the train from moving*’ refers to preventing a stationary train from moving.” PO Resp. 11. “Petitioner does not disagree with PO that ‘preventing the train from moving’ should mean ‘preventing a stationary train from moving.’” Pet. Reply 4.

As Patent Owner contends, its construction is consistent with the context of the claims and the specification of the ’926 patent. See Pet. 12–13 (reproducing Ex. 1001, 3:42–49, 4:7–14, 4:25–32, 9:26–65, 10:10–14). Further, the testimony of both Patent Owner’s and Petitioner’s declarants supports Patent Owner’s construction. Mr. Loud testifies: “As the context of the claims make clear, and as confirmed by the description in the specification, ‘stopping the train before the train moves outside the boundary ...’ refers to slowing down of a moving train until it is not moving, whereas ‘preventing the train from moving’ refers to preventing a stationary train from moving.” Ex. 2009 ¶ 30; see also Ex. 2006, 55:3–56:12 (cross-examination testimony of Dr. Pullen).

Given the above, we are persuaded that the broadest reasonable interpretation in light of the specification of the ’926 patent of “stopping the train” is to slow down a moving train until it is not moving and “preventing the train from moving” is to prevent a stationary train from moving.

B. Obviousness

Section 103(a) bars patentability 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 [(‘POSITA’ or ‘POSA’)] to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The ultimate determination of obviousness under § 103 is a question of law based on underlying factual findings. *In re Baxter Int’l, Inc.*, 678 F.3d 1357, 1362 (Fed. Cir. 2012) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1996)). These underlying factual considerations consist of: (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) “secondary considerations” of non-obviousness such as “commercial success, long felt but unsolved needs, failure of others, etc.”⁵ *KSR*, 550 U.S. at 406 (quoting *Graham*, 383 U.S. at 17–18).

Level of Ordinary Skill in the Art

In the Petition, Petitioner contends that:

[A] POSA as of July 2, 2002 would have had at least a bachelor’s of science degree in electrical engineering, mechanical engineering, aeronautics and astronautics, or a related engineering field, and would also have had at least three (3) years of experience with transportation control and safety systems. . . . Such a POSA would have had knowledge of transportation communication systems, movement control schemes, and on-board computers, and would have understood how to search available literature for relevant publications.

⁵ The record contains no evidence of secondary considerations.

Pet. 10 (citing Ex. 1002 ¶¶ 44–45). Patent Owner disagrees with Petitioner’s definition of the level of ordinary skill in the art because it does not require any background related to train operations or control systems. PO Resp. 14–15. Patent Owner contends:

[A] POSITA for purposes of the ’926 Patent would have had (i) an undergraduate engineering degree or the equivalent thereof and at least three years of experience in train operations or train control systems, (ii) knowledge of train control systems, train safety systems that include wayside systems, and train communications systems, and (iii) an understating of how to search available literature for relevant publications.

Id. (citing Ex. 2009 ¶ 42). Patent Owner argues that train control experience is necessary because the ’926 patent relates to control functions concerning movement of a train and authorities governing the movement. PO Resp. 14–15. Petitioner does not dispute this in its Reply. *See generally* Pet. Reply.

In determining the level of skill in the art, we consider the type of problems encountered in the art, the prior art solutions to those problems, the rapidity with which innovations are made, the sophistication of the technology, and the educational level of active workers in the field. *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986); *Orthopedic Equip. Co. v. U.S.*, 702 F.2d 1005, 1011 (Fed. Cir. 1983).

Both Petitioner’s and Patent Owner’s definitions include an undergraduate engineering degree or the equivalent and both include experience related to transportation control and safety systems. The difference between Petitioner’s and Patent Owner’s definitions is whether the transportation control and safety systems relate specifically to train control and safety systems. Patent Owner’s argument that the level of ordinary skill in the art would include experience with train control and

safety systems is persuasive. The '926 patent is directed to “automatic control of trains” and solves safety problems with train operations and movements. Ex. 1001, 1:14–4:3.

Weight of Dr. Pullen’s Testimony

Patent Owner argues that we should give Petitioner’s declarant Dr. Pullen’s testimony little or no weight because “he does not have relevant train-related experience that would qualify him as a POSITA.” PO Resp. 15–16. Petitioner disagrees. Pet. Reply 5–6.

Patent Owner’s argument is not persuasive. Dr. Pullen holds several degrees in Aeronautics, a field of study that involves control systems: an undergraduate degree he received in 1989, a Master’s degree he received in 1990, and a Ph.D. he received in 1996. Ex. 1003, 1. Dr. Pullen’s declaration indicates that he has “twenty years of experience in the field of transportation safety and control systems, with [the] last three years specifically focused on train safety and control systems.” Ex. 1002 ¶ 7; see *also id.* ¶¶ 8–17 (describing education and experience related to control systems). Dr. Pullen’s lack of experience specific to trains before the last three years may detract from the weight to be given his testimony on certain matters, but we are not persuaded to give Dr. Pullen’s testimony little or no weight.

Ground 1—Burns

Petitioner contends that claims 1 and 20 are unpatentable over Burns. See Pet. 16–26. Patent Owner disagrees. See PO Resp. 21–31.

Overview of Burns

Burns is a paper titled “Safety and Productivity Improvement of Railroad Operations by Advanced Train Control Systems.” Ex. 1006, 33. Burns discloses an advanced train control system (“ATCS”) that uses an on-board computer or Train Control Computer (“TCC”) to control the train. *Id.* at 34. “The TCC is also the safety device which enforces movement and speed authority limits by applying train brakes when it predicts that the train will otherwise exceed its authorized limits.” *Id.*

Burns discloses that the “ATCS improves safety of train operations by expanding communication of critical information, adding safety enhancing features, and continuously monitoring for the occurrence of specified hazards.” *Id.* at 37. Burns discloses that:

Movement authorities separate and protect trains in unsignaled portions of the railroad, by commanding movements between designated points over particular track segments, into and out of sidings, through speed restrictions and past work crews, after waiting for opposing traffic. Movement authorities protect track forces in all territories. ATCS provides extensive new capabilities for authority generation, checking, distribution, and enforcement, which yield operating safety enhancements.

Id. After an authority is generated, it is checked against current authorities, approved, and then sent by the dispatcher via a Data Network to the locomotive cab. *Id.* “Once acknowledged, the authority is monitored by the TCC, which will apply brakes if it predicts that the train will soon violate the authority limits.” *Id.*

Analysis

In the Petition, Petitioner contends that Burns teaches the step recited in claims 1 and 20 of “preventing the train from moving from a current location if the current location is not within a boundary for an accepted authorization.” Pet. 23–25. In this regard, Petitioner asserts:

Burns discloses that the TCC is “a safety device [that] enforces movement . . . authority limits by applying train brakes when it predicts that the train will otherwise exceed its authorized limits.” (Ex. 1006, 34). A POSA would have understood that the safety afforded by the TCC, in the form of applying the brakes to prevent the train from exceeding the limits of a granted movement authority, would have been used to prevent the violation of the train being moved without a prerequisite authority. (See Ex. 1002, ¶62; see also Ex. 1006, 37). Thus, a POSA would have understood *Burns* as teaching that without an authorization, the train is not permitted to move. (Ex. 1002, ¶62).

Id. at 23–24.

Patent Owner contends that Petitioner’s evidence does not establish that the preventing step missing from Burns would have been known by a person of ordinary skill in the art. PO Resp. 21–31. Patent Owner argues that Burns does not explicitly teach the preventing step and Dr. Pullen’s testimony is conclusory and lacks evidentiary support. See *id.* Patent Owner provides testimony of its declarant Mr. Loud to rebut Dr. Pullen’s testimony. *Id.* at 24 (citing Ex. 2009 ¶¶ 51–54).

It is Petitioner’s burden to demonstrate by a preponderance of the evidence how claims 1 and 20 are unpatentable over Burns. See 35 U.S.C. § 316 (e). Petitioner fails to meet its burden. Burns does not explicitly disclose the preventing step, and Dr. Pullen’s testimony does not sufficiently

show that a POSITA would have understood Burns to teach the preventing step. Dr. Pullen testifies:

[A] person of skill in the art would also understand that, because of the TCC's enforcement of movement authorities, the application of brakes would be performed automatically, and that without proper authorization, a train would not be permitted to move at all.

Ex. 1002 ¶ 62. As can be seen from the above, Dr. Pullen's testimony is conclusory. In the Petitioner's Reply, Petitioner argues that Burns' disclosure of waiting for opposing traffic supports Dr. Pullen's testimony. Pet. Reply 8–12 (citing Ex. 1002 ¶ 61). Burns states: "Movement authorities separate and protect trains in unsignaled portions of the railroad, by commanding movements between designated points over particular track segments, into and out of sidings, through speed restrictions and past work crews, after *waiting for opposing traffic*." Ex. 1006, 37 (emphasis added). Burns' statement, however, also does not disclose the preventing step. Burns' statement does not teach that the waiting occurs if the current location is not within a boundary for an accepted authorization. Although Dr. Pullen cites to Burns' statement in ¶ 61 of his Declaration, Dr. Pullen does not provide sufficient explanation as to how a POSITA would have understood Burns' statement to teach the preventing step. See Ex. 1002 ¶¶ 61, 62.

Further, Mr. Loud's testimony contradicts Dr. Pullen's testimony. Mr. Loud testifies:

A POSITA would understand that *Burns* only addresses applying brakes to moving trains after a movement authority is approved and acknowledged so that the train does not subsequently leave the boundary for the accepted authorization absent additional authorization (i.e., for the adjacent section of

track). Thus, *Burns* only refers to enforcing a movement authority while the train is *within* an accepted boundary: brakes are applied so that the train does not leave the authorized area, which resembles the “stopping” step recited in the challenged claims of the ’926 Patent.

Ex. 2009 ¶ 51. Mr. Loud’s explanation of the teachings of *Burns* sufficiently supports his testimony. *See id.* ¶¶ 52–54 (also rebutting Dr. Pullen’s testimony).

Given the above, we determine that Petitioner fails to show by a preponderance of the evidence that claims 1 and 20 are unpatentable over *Burns*.

Ground 2—Burns and Nickles

Petitioner contends that claims 1–6, 20, and 21 are unpatentable over *Burns* and *Nickles*. *See* Pet. 26–51. Patent Owner disagrees. *See* PO Resp. 31–39.

Overview of Nickles

Nickles describes a method of optimizing train operations using a system called “LEADER,” Locomotive Engineers Assist Display and Event Recorder. Ex. 1007, 1:13–17. According to *Nickles*, “LEADER’s comprehensive knowledge of the state of the train . . . allow[s] the Railroad to convey and enforce operating policies by programming limits into the LEADER System” *Id.* at 5:33–40. LEADER is capable of a cruise control mode of operation, in which the control system issues commands to “automatically control the locomotive power and braking systems, the train brake system of each car and ancillary systems which effect train movement.” *Id.* at 7:59–67, 8:13–16. In cruise control mode, LEADER can

receive and activate commands from a railroad central traffic control center. *Id.* at 8:19–23. “This received information would include impe[n]ding slow orders, speed limit changes, aspects of approaching signals, etc.” *Id.* at 8:23–25. Figure 10 of Nickles is reproduced below:

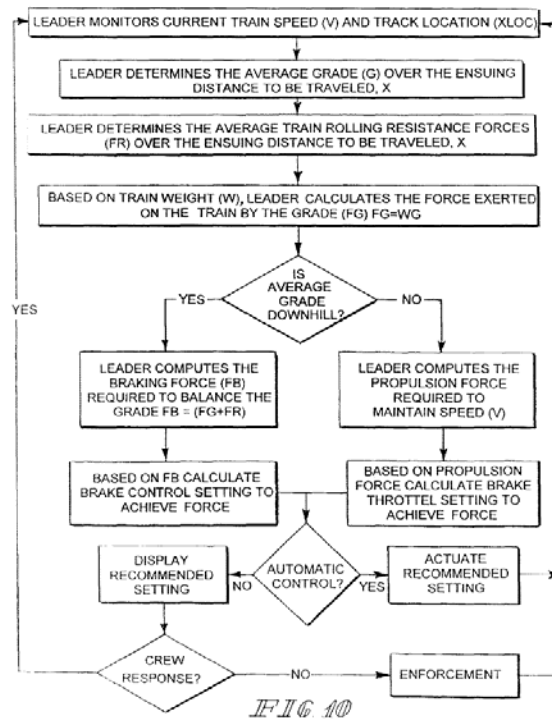


Figure 10 is a flow chart for optimizing train braking to maintain grade. *Id.* at 13:1–2. In this process, LEADER monitors train speed and track location, and “determines the average grade (G) over the ensuing distance to be traveled, X. . . . Based on train weight (W), LEADER calculates the force exerted on the train by the grade (FG)” *Id.* at 13:4–9. LEADER determines the amount of braking necessary to balance the grade or the propulsion required to maintain speed. *Id.* at 13:9–15. If the train is in automatic control, the settings are actuated. *Id.* at 13:25–27.

Analysis

In the Petition, Petitioner incorporates its analysis of Burns from ground 1 to address the preventing step and additionally cites to Nickles. Pet. 39–40, 49. With respect to Nickles, the Petition states:

Nickles discloses that “[LEADER] ***maintains*** train stop...to ***prevent*** the train from entering ***unauthorized*** territories that could cause accidents with other train traffic.” (Ex. 1007, 2:7–9). Thus, LEADER prevents unauthorized motion by maintaining the train in its current location. (Ex. 1002, ¶76). Furthermore, LEADER additionally provides a mechanism by which a train is prevented from unauthorized movement by an unauthorized user (as opposed to simply applying the brakes when movement is detected). (See Ex. 1007, FIG. 15, 15:29–33 (“A determination is [] made whether the user, through his I.D. or through his qualification level is approved for the particular equipment or locomotive. If the engineer is not, the system is disabled.”)).

Pet. 40.

Patent Owner argues that “[s]upplementing *Burns* with *Nickles* does not cure the deficiencies” of Burns discussed above with respect to ground 1. PO Resp. 31. Patent Owner argues that Nickles does not teach the preventing step and that Petitioner fails to provide any reason, with rational underpinnings, to combine Burns and Nickles to teach the preventing step. *Id.* at 32–39.

It is Petitioner’s burden to demonstrate by a preponderance of the evidence how claims 1 and 20 are unpatentable over Burns and Nickles. See 35 U.S.C. § 316(e). Although the Petitioner articulates some rationale to combine Burns and Nickles, the articulated rationale is not specific to modifying Burns with Nickles to teach the preventing step. See Pet. 32–35. Instead, the Petition suggests modifying Burns with Nickles “to use the

equations and calculations presented in *Nickles* to determine a safe stop distance” or “to employ the braking algorithms described by *Nickles* to the train safety functions described by *Burns* in order to achieve enhanced train safety.” *Id.* Likewise, Petitioner’s arguments in its Reply focus on the rationale to combine *Burns* and *Nickles* related to braking calculations and algorithms. *See* Pet. Reply 15–17. Petitioner, thus, fails to provide a sufficient rationale with logical underpinnings to combine *Burns* and *Nickles* to teach the preventing step. *See* Pet. 32–35. “To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

Given the above, we determine that Petitioner fails to show by a preponderance of the evidence that claims 1 and 20, and claims 2–6 and 21, dependent thereon, are unpatentable over *Burns* and *Nickles*. *See In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992) (“[D]ependent claims are nonobvious if the independent claims from which they depend are nonobvious.”).

Ground 3—Judge

Petitioner contends that claims 1 and 20 are unpatentable over Judge. *See* Pet. 51–58. Patent Owner disagrees. *See* PO Resp. 39–45.

Overview of Judge

Judge is an article, titled “BNSF/UP PTS [P]ilot [A]dvances in Northwest,” in the May 1996 issue of *Progressive Railroading*. Ex. 1011, 49. The article describes a Positive Train Separation (“PTS”) system that for

safety “is designed to eliminate train collisions.” *Id.* The article states that the system “does not replace any of the movement authority controls in place today. Train movement will still be authorized by signals, track warrants and other safety systems now in use. The PTS system merely enforces these rules.” *Id.*

The PTS system has a server segment, a communications segment, and a locomotive segment. *Id.* at 50. The system includes a Location Determination System, which has a global positioning system receiver, to verify where the train is and what track it is on. *Id.* at 52. The server observes all train movement authorities granted by the Computer Aided Dispatching system and by the dispatcher, and transmits a PTS enforceable authority (“PTSEA”) to a computer on the locomotive. *Id.* at 50. The server checks the PTSEA before sending to ensure that it does not conflict with any other rules it is monitoring. *Id.* “Without a PTSEA, a PTS train cannot be moved.” *Id.*

Analysis

In the Petition, Petitioner contends that the step recited in claims 1 and 20 of “preventing the train from moving from a current location if the current location is not within a boundary for an accepted authorization” is taught by Judge. Pet. 56–57; *see also* Pet. Reply 17–20. In this regard, Petitioner asserts:

Judge teaches that “[b]efore the server sends the PTS enforceable authority, called PTSEA [] to the train, it checks to make sure that the PTSEAs do not conflict with any of the rules it has been charged to monitor.” (Ex. 1011, 50). The train movements that are addressed by *Judge*’s PTS system are “[t]rain movement[s] authorized by signals, **track warrants** and other safety systems now in use.” (Ex. 1011, 50). *Judge* further

provides that “[t]he PTS system [] enforces these rules.” (Ex. 1011, 50). *Judge* further discloses that “[w]ithout a [PTS enforceable authority] PTSEA, a PTS train **cannot be moved**.” (See Ex. 1011, 50).

Id. at 56. As can be seen from the above, Petitioner does not cite to Dr. Pullen’s testimony when specifically addressing the preventing step. *Id.* Petitioner argues that Judge meets the preventing step because when the train does not receive a PTSEA, there are no accepted authorizations and the train’s position is not within a boundary for an accepted authorization. Pet. Reply 18–19.

Patent Owner disagrees and argues that “a train without a PTSEA is a train without an accepted authorization—and thus a train lacking any boundary of an accepted authorization—not one that is located outside such a boundary.” PO Resp. 40 (emphases omitted). Patent Owner argues that Judge says nothing about preventing a stationary train from moving based on its location if it is located outside of a boundary of an accepted authorization. *Id.* at 41 (citing Ex. 2009 ¶¶ 61, 65).

It is Petitioner’s burden to demonstrate by a preponderance of the evidence how claims 1 and 20 are unpatentable over Judge. See 35 U.S.C. § 316 (e). Petitioner’s evidence fails to sufficiently show that, based on Judge’s disclosure and the statement that “[w]ithout a [PTS enforceable authority] PTSEA, a PTS train cannot be moved” (see Ex. 1011, 50), a POSITA would have understood that a stationary train located outside of a boundary of an accepted authorization would be prevented from moving based on its location. Further, Patent Owner’s argument is supported by the testimony of Mr. Loud, who testifies, “a train cannot be outside the boundary of an authorization that does not exist.” Ex. 2009 ¶ 65.

Given the above, we determine that Petitioner fails to prove by a preponderance of the evidence that claims 1 and 20 are unpatentable over Judge.

Ground 4—Judge and Nickles

In our Institution Decision, we determined that Petitioner’s proposed combination of Judge and Nickles is unclear from the Petition. Dec. on Inst. 17–19; *see also* PO Resp. 45–47. In its Reply, Petitioner argues that the Petition meets the particularity requirement of 35 U.S.C. § 312(a). Pet. Reply 22–25. Petitioner asserts that the Petition clearly proposes to modify Judge with Nickles. *Id.* at 22–23 (citing Pet. 58–59 (“[A] POSA would have . . . predictably been able to implement the teachings of *Nickles* in the context of *Judge*’s system to yield predictable results.”)).

Petitioner’s argument is unpersuasive because it does not account for contradictory statements made in the Petition, as pointed out in the Institution Decision. Dec. on Inst. 17–19; PO Resp. 45–47. For example, the Petition relies upon Judge to teach details of a “communication capability” and contends that a person of ordinary skill in the art would look to Judge to implement the communication of enforceable authorities in Nickles’ LEADER system. Pet. 60–61. The Petition asserts, “a POSA would have been motivated and able to combine the communication segment described in *Judge* with the train control system described in *Nickles*.” *Id.* at 61. This suggests that the Petition proposes to modify Nickles’ LEADER system with Judge’s communication segment. The Petition, however, also proposes incorporating features of Nickles into Judge. *Id.* at 62 (“Incorporation of the features of *Nickles* into *Judge* is

nothing more than the use of known techniques to improve similar systems”). The Petition also appears to suggest modifying Judge to include Nickles’ braking to cease movement of a train. *See id.* at 63.

A petition for *inter partes* review must “identif[y], in writing and with particularity, each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim.” 35 U.S.C. § 312(a)(3). According to 37 C.F.R. § 42.104(b)(4), a petition for *inter partes* review “must identify how the construed claim is unpatentable under the statutory grounds on which the petitioner challenges the claims, and must specify where each element of the claim is found in the prior art patents or printed publications relied upon,” and 37 C.F.R. § 42.104(b)(5) adds that the Petition must “identify[] specific portions of the evidence that support the challenge,” 37 C.F.R. § 42.104(b)(5). Similarly, 37 C.F.R. § 42.22(a)(2) states that each petition must include “[a] full statement of the reasons for the relief requested, including a detailed explanation of the significance of the evidence including material facts, and the governing law, rules, and precedent.”

The Petition fails to follow these requirements arising from the statute and rules governing *inter partes* review. The Petition fails to set out with sufficient particularity the proposed combination of Nickles and Judge. Accordingly, we determine that Petitioner fails to prove by a preponderance of the evidence that claims 1–6, 20, and 21 are unpatentable over Judge and Nickles.

III. MOTION TO EXCLUDE

Patent Owner moves to exclude Exhibit 1002, which is the declaration of Dr. Pullen. Paper 26. Because the outcome does not change based on whether or not we exclude Exhibit 1002, we dismiss Patent Owner's Motion to Exclude as moot.

IV. CONCLUSION

We determine that Petitioner fails to demonstrate by a preponderance of the evidence that claims 1–6, 20, and 21 are unpatentable under 35 U.S.C. § 103(a) over the prior art. We dismiss as moot Patent Owner's Motion to Exclude.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–6, 20, and 21 of U.S. Patent No. 7,079,926 B2 have not been shown to be unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Exclude Exhibit 1002 is dismissed; and

FURTHER ORDERED that parties to the proceeding seeking judicial review of this Final Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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