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Paper 41
Entered: November 13, 2019

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

WIRTGEN AMERICA, INC and JOSEPH VÖGELE AG,
Petitioner,

v.

CATERPILLAR PAVING PRODUCTS INC.,
Patent Owner.

IPR2018-01200
Patent 9,045,871 B2

Before LYNNE H. BROWNE, JAMES J. MAYBERRY, and RICHARD H. MARSCHALL, *Administrative Patent Judges*.

BROWNE, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determing All Claims Unpatentable
Denying Patent Owner's Motion to Amend
35 U.S.C. § 318(a)

I. INTRODUCTION

Wirtgen America, Inc. and Joseph Vögele AG ("Petitioner"), on June 7, 2018, filed a Petition requesting *inter partes* review of claims 1–6, 8, 9, and 12–17 of U.S. Patent No. 9,045,871 B2 ("the '871 patent"). Paper 3 ("Pet."). We issued a Decision to Institute an *inter partes* review (Paper 9, "Dec.") of all challenged claims (1–6, 8, 9, and 12–17) under all grounds, namely Grounds 1–5 discussed below.

After institution of trial, Caterpillar Paving Products Inc. ("Patent Owner") filed a Patent Owner Response (Paper 17, "PO Resp.") and a Patent Owner's Contingent Motion to Amend (Paper 19, "PO MTA"). Thereafter, Petitioner filed a Petitioner's Reply to Patent Owner's Response (Paper 23, "Pet. Reply") and Petitioner's Opposition to Patent Owner's Motion to Amend (Paper 24, "Pet. Opp. to MTA"). Patent Owner then filed a Patent Owner's Sur-reply (Paper 26, "PO Sur-reply) and Patent Owner's Reply in Support of Motion of Amend (Paper 27, "PO Reply in Support of MTA"). Petitioner subsequently filed a Petitioner's Sur-reply to Patent Owner's Reply to Opposition to Motion to Amend (Paper 34, "Pet. Sur-reply to Opp. to MTA").

Oral argument was conducted on July 30, 2019, for this proceeding and the transcript of the hearing has been entered as Paper 40.

We have jurisdiction under 35 U.S.C. § 6 and issue this decision under 35 U.S.C. § 318(a). After considering the evidence and arguments of both parties, and for the reasons set forth below, we determine that Petitioner has met its burden of showing, by a preponderance of the evidence, that claims 1–6, 8, 9, and 12–17 are unpatentable. We further determine that Patent Owner has met its burden of production for proposed substitute

claims 21–24, 26, 27, and 30–33, but that Petitioner has also met its burden of showing, by a preponderance of evidence, that these claims are unpatentable as well.[1]

II. BACKGROUND

A. Related Proceedings

Petitioner indicates that the '871 patent is the subject of "ITC Investigation No. 337-TA-1088 ["ITC 337-TA-1088"] entitled 'Road Construction Machines and Components Thereof' filed on October 26, 2017." Pet. 78. According to Petitioner, "[i]n an initial determination, the ITC found claims 1–5, 8, 9, and 12–17 of the '871 patent invalid under 35 U.S.C. § 101." *Id.* (citing Ex. 1026). Petitioner notes that "[t]he initial determination does not preempt the PTAB from instituting trial and finding the claims unpatentable under § 103." *Id.* (citing *Instradent USA, Inc. v. Nobel Biocare Servs. AG*, IPR2015-01786, Paper 106, 3–4 (PTAB Feb. 15, 2017)).

Petitioner concurrently filed another petition requesting *inter partes* review challenging claims 1–6, 8, 9, and 12–17 of the '871 patent. IPR2018-01199, Paper 3.

[1] We note that Patent Owner proposed substitute claims 21–36, however, claims 25, 28, 29, and 34–36 do not correspond to a challenged claim. Accordingly, we do not consider these proposed substitute claims. *See* 35 U.S.C. § 316(d) (providing that a patent owner may file a motion to amend the patent to cancel any challenged patent claim and/or propose a reasonable number of substitute claims for each challenged claim).

B. The ’871 Patent

The ’871 patent is directed “to paving machines and, more particularly, to a system for automatically performing one or more set-up functions for a screed assembly of a paving machine.” Ex. 1001, 1:7–10. In the system described in the ’871 patent, the screed assembly is adjustable. *Id*. at 1:45–46. The system includes actuators to adjust the screed assembly and sensors to sense configuration parameters. *Id.* at 1:46–51. The system includes a controller in communication with the sensors that controls operation of the actuators and a memory for storing at least two sets of parameters in response to save commands from the controller. *Id.* at 1:51–56. The controller is configured to recall one of the sets of parameters from memory in response to a recall command, whereupon the configuration of the screed assembly is automatically adjusted to the recalled configuration parameters. *Id.* at 1:57–62.

Operation of the controller is shown in Figure 4 of the ’871 patent reproduced below:

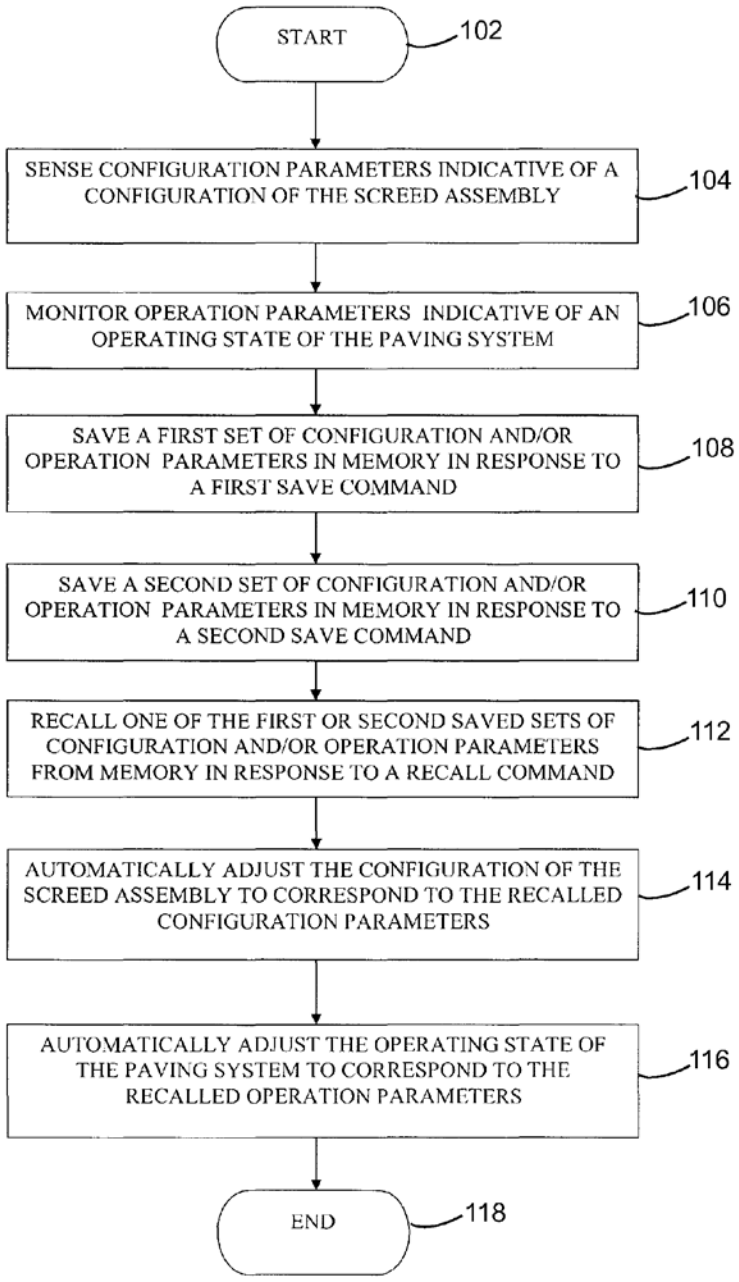

FIG. 4

Figure 4 “is a flow chart for a method of operating a paving machine in accordance with the disclosure.” Ex. 1001, 2:35–36. The steps shown in the

flow chart are described in the ’871 patent starting at column 8, line 42. For example the ’871 patent states, “[i]n step 112, one of the saved first or second saved sets of parameters may be recalled from memory in response to a recall command. If multiple sets of parameters are stored in memory, the operator can recall the desired set of parameters using the respective identifier.” *Id.* at 9:12–16.

C. Illustrative Claim

Petitioner challenges claims 1–6, 8, 9, and 12–17 of the ’871 patent. Claims 1, 9, and 13 are independent. Representative claim 1 is reproduced below:

1. A paving machine comprising:

a screed assembly having a plurality of adjustable components, the plurality of adjustable components being configured to adjust the screed assembly into a plurality of different configurations;

a plurality of actuators, each actuator being associated with a respective adjustable component of the screed assembly and being supported and configured to adjust the respective adjustable component into different configurations;

a plurality of sensors each configured to sense a configuration parameter of a respective adjustable component of the screed assembly indicative of the configuration of the respective adjustable component; and

an operator input device configured to allow an operator of the paving machine to enter a first save command, a second save command and a recall command; and

a controller in communication with the operator input device and the sensors and configured to control operation of the actuators, the controller being configured to:

save in memory in response to the first save command a first set of the configuration parameters sensed by the plurality of sensors and corresponding to

> the configurations of the adjustable components of the screed assembly that exist at the time of entry of the first save command in association with a first paving operation;
>
> save in memory in response to the second save command a second set of the configuration parameters sensed by the plurality of sensors and corresponding to the configurations of the adjustable component of the screed assembly then being used that exist at the time of entry of the second save command in association with a second paving operation;
>
> recall one of the first set or second set of the configuration parameters from memory in response to the recall command in association with a third paving operation; and
>
> adjust automatically the adjustable components of the screed assembly in associate with the third paving operation to correspond to the configuration parameters included in the recalled first set or second set of the configuration parameters.

Ex. 1001, 9:51–10:25.

D. References Relied Upon

The Petitioner relies on the following references as the basis for the grounds of rejection or as evidence in support of a position advanced by Petitioner:

Name	Reference	Ex. No.
Grembowicz	US 5,568,992, issued Oct. 29, 1996	1006
Panoushek	US 6,871,483 B1, issued Mar. 29, 2005	1008
Buschmann	US 2012/0010787 A1, published Jan. 12, 2012	1007
Lossow	US 2009/0226255 A1, published Sept. 10, 2009	1010
Davin	US 3,602,113, issued Aug. 31, 1971	1011
Emerson	US 6,019,544, issued Feb. 1, 2000	1012

Rutz	US 8,894,323 B2, issued Nov. 25, 2014[2]	1017

Pet. 2–8, 43.

E. The Asserted Grounds of Unpatentability

Petitioner asserts the challenged claims are unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §	References
1, 6, 9, 13, 17	103(a)	Grembowicz, Panoushek
2, 3, 14	103(a)	Grembowicz, Panoushek, Buschmann
5	103(a)	Grembowicz, Panoushek, Lossow
8, 12	103(a)	Grembowicz, Panoushek, Davin
4, 15, 16	103(a)	Grembowicz, Panoushek, Buschmann, Emerson

Pet. 12–13. Petitioner supports its challenge with the Declarations of Mark Ehsani, Ph.D., dated June 7, 2018, and May 7, 2019 (Exs. 1003, 1055, 1056). Patent Owner supports its opposition to these challenges with the Declarations of Khalid Sorensen, dated February 15, 2019, and June 4, 2019 (Exs. 2007, 2010).

III. ANALYSIS

A petition must show how the construed claims are unpatentable under the statutory ground it identifies. 37 C.F.R. § 42.104(b)(4) (2017). 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.

[2] We note that this patent was filed April 17, 2012.

2015). To prevail, Petitioner must establish the facts supporting its challenge by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

A. Level of Ordinary Skill in the Art

Petitioner asserts that

> A person of ordinary skill in the art ("POSITA") at the time of the claimed invention would have had either: (1) a bachelor's degree (or equivalent) in mechanical engineering or a similar field and at least two to five years of experience working on mobile construction machine design or in a similar field; or (2) seven to ten years of experience working on mobile construction machine design or in a similar field.

Pet. 10 (citing Ex. 1003 ¶¶ 55–56). Patent Owner does not contest this definition. *See* PO Resp. 7–8. Rather, Patent Owner appears to adopt this definition as its own. *See id.*

Applying this definition, Patent Owner asserts that Petitioner's declarant Dr. Ehsani is not a person of ordinary skill in the art because Dr. Ehsani does not have a degree in mechanical engineering. PO Resp. 8. Patent Owner further asserts that "Dr. Ehsani does not have seven to ten years of experience working on 'mobile construction machine design or in a similar field.'" *Id.* (citing Exs. 1003, 1004).

Petitioner responds that "Dr. Ehsani has substantial credentials to qualify him as an expert and permit him to testify about the prior art and the motivation to combine." Pet. Reply 2. Noting his credentials, Petitioner contends that "Dr. Ehsani has vast experience working with the interplay of mechanical and electrical engineering within vehicle systems. (Ehsani CV). He is well positioned to offer opinions on the interrelation between simple

actuators, sensors, and electrical systems relevant here." *Id.* at 3. Comparing Dr. Ehsani's credentials to those of Patent Owner's expert, Dr. Sorensen, Petitioner notes that Dr. Ehsani has 35 years of experience in the field of mechatronics as compared to Dr. Sorensen's 15 years of experience in this field. *Id.* at 1.

Petitioner contends further that whether a particular person is a POSITA is not the standard used to determine if that person is an expert. Petitioner cites *Endress + Hauser, Inc. v. Hawk Measurement Systems. Proprietary Ltd.*, 122 F.3d 1040, 1042 (Fed. Cir. 1997) for the proposition that '"[t]he 'person of ordinary skill in the art' is a theoretical construct used in determining obviousness under Section(s) 103, and is not descriptive of some particular individual.'" Pet. Reply 2 (citing *Okajima v. Bourdeau*, 261 F.3d 1350, 1354 (Fed. Cir. 2001) (the level of ordinary skill is merely the prism or lens through which to view the prior art)).

We agree with Petitioner that Dr. Ehsani's extensive experience with technology that combines both electronics and mechanical engineering (i.e., mechatronics) provide sufficient foundation for him to testify in this proceeding, which involves electronic control of mechanical machinery such as the paving machine at issue. A person may not need to be a person of ordinary skill in the art in order to testify as an expert under Rule 702, but rather must be "qualified in the pertinent art." *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1363–64 (Fed. Cir. 2008).

B. Claim Construction

The claim construction standard to be employed in an *inter partes* review changed in October, 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 (October 11, 2018). At the time of the filing of the Petition in this proceeding, however, the applicable claim construction standard was set forth in 37 C.F.R. § 42.100(b), which provided that "[a] claim in an unexpired patent . . . shall be given its broadest reasonable construction in light of the specification of the patent in which it appears." 37 C.F.R. § 42.100(b) (2017); *see also Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142 (2016) (upholding the use of the broadest reasonable interpretation standard). Accordingly, in this *inter partes* review, claim terms are given their broadest reasonable construction in light of the specification of the patent in which they appear. Under the broadest reasonable construction standard, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Also, we are careful not to read a particular embodiment appearing in the written description into the claim if the claim language is broader than the embodiment. *See In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993) ("[L]imitations are not to be read into the claims from the specification.").

Petitioner asserts that the recitations "a first paving operation," "operating state," "screed assembly having a plurality of adjustable components," and "the plurality of adjustable components includes the tow arms," should be construed. Pet. 10–11. Patent Owner contends that "Petitioners' proposed constructions would not affect the outcome of this *inter partes* review. Petitioners do not hinge any of their arguments on their proposed constructions, and the Board did not adopt any of them in its decision to institute review." *Id.* at 18 (citing Paper 9, 7–8). We agree with

Patent Owner. Construction of these recitations is not necessary to our decision.

Patent Owner asserts that "first save command," "second save command," and "recall command" should be construed. PO Resp. 13–17. Specifically, Patent Owner proposes that "first save command" be construed as a "command to save a first set of parameters using a corresponding identifier;" "second save command" should be construed as a "command to save a second set of parameters using a corresponding identifier;" and "recall command" should be construed as "command to recall a desired set of parameters using an assigned identifier." *Id.* at 14, 16. That is, Patent Owner contends that these three claim terms should be construed to require an "identifier." As the meaning of these terms is central to our decision below, we agree that construction of these terms is necessary for our resolution of the issues in this proceeding and discuss the construction for each of these recitations.

1. Principles of Claim Construction

As discussed above, in this proceeding we determine the meaning of a claim using the "broadest reasonable construction in light of the specification of the patent in which it appears." 37 C.F.R. § 42.100(b); *Cuozzo*, 136 S. Ct. at 2144–46. In addition to the specification, the prosecution history plays an important role in claim construction. *Tempo Lighting, Inc. v. Tivoli, LLC*, 742 F.3d 973, 977 (Fed. Cir. 2014) ("In claim construction, this court gives primacy to the language of the claims, followed by the specification. Additionally, the prosecution history, while not literally within the patent document, serves as intrinsic evidence for purposes of claim construction. This remains true in construing patent

claims before the PTO." (*citing In re Morris*, 127 F.3d 1048, 1056 (Fed. Cir. 1997)). Indeed, the U.S. Court of Appeals for the Federal Circuit has indicated, in the context of an *inter partes* review, that "[t]he PTO should . . . consult the patent's prosecution history in proceedings in which the patent has been brought back to the agency for a second review." *Microsoft Corp. v Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015).

2. Express Claim Language

Claim 1 introduces the commands at issue. Ex. 1001, 9:66–67. The express language of claim 1 does not include the recitation of identifiers. *Id.* at 9:51–10:25. Thus, the express language of claim 1 does not support Patent Owner's position. Claim 13 also recites these commands without reciting identifiers. *Id.* at 12:26–59. Claim 9 (which only recites the "first save command" and the "recall command"), likewise, does not recite identifiers. *Id.* at 11:21–53. Accordingly, the express language of claims 9 and 13 does not support Patent Owner's position that each of the claims' commands should be construed to require use of a corresponding identifier. PO Resp. 15, 17.

3. Specification

The "first save command," "second save command," and "recall command" are discussed throughout the Specification of the '871 patent. *See, e.g.*, Ex. 1001, 1:52–62, 2:16–22, 8:60–9:28. Identifiers are described in the context of their use by controller 66 as the mechanism for recalling data. *Id.* at 7:39–42. The Specification explains further that different identifiers are assigned for each saved set of parameters and that "controller 66 may further be configured to recall the saved sets of parameters from memory in response to a recall command." *Id.* at 7:40–41, 48–50. In

operation, the Specification explains that "[t]o the extent more than one set of parameters has been saved, the operator may recall the desired set of parameters using the assigned identifier." *Id.* at 8:26–28. As noted by Petitioner, this language is permissive in that it indicates that identifiers "may" be used. Pet. 7. We agree with Petitioner that "[t]he '871 patent never says identifiers are required, and the specification and prosecution history have nothing that amounts to disavowal." *Id.* (citing *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002) ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.")). Thus, the Specification does not support Patent Owner's position that each of the claims commands should be construed to require use of a corresponding identifier. PO Resp. 15, 17.

4. Prosecution History

Neither party identifies, nor do we discern, any instance during prosecution of the '871 patent where the Examiner construed the recitations at issue or considered whether the commands require use of a corresponding identifier. Accordingly, the prosecution history does not inform our inquiry.

5. Summary

Upon reviewing the explicit claim language, the Specification, and the prosecution history, we conclude that the first save command, second save

command, and recall command, do not require use of a corresponding identifier.

C. Principles of Law

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and, when presented, (4) objective evidence of nonobviousness.[3] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

We analyze the asserted grounds of unpatentability in accordance with the above-stated principles.

D. Obviousness of Claims 1, 6, 9, 13, and 17 in view of the combined teachings of Grembowicz and Panoushek

Petitioner contends that claims 1, 6, 9, 13, and 17 are unpatentable under 35 U.S.C. § 103(a) in view of Grembowicz and Panoushek. Pet. 17–58. Having now considered the evidence in the complete record established during trial, we are persuaded that Petitioner has demonstrated, by a preponderance of the evidence, that these claims would have been obvious in view of the combined teachings of Grembowicz and Panoushek. We

[3] Patent Owner provides no such evidence for our consideration. *See generally* PO Resp.

begin our analysis with a brief overview of Grembowicz and Panoushek. Next, we address the parties' contentions and then we discuss our reasoning. Our analysis focuses on independent claim 1 because Petitioner's challenge to claims 9 and 13 relies upon the same assertions and evidence as its challenge to claim 1 and claims 6 and 17 depend from claims 1 and 13, respectively. Pet. 45–55.

1. Grembowicz

Grembowicz is directed to "a screed control system for an asphalt paver of the floating screed type equipped with an adjustable screed extender." Grembowicz, 1:6–8. Grembowicz's asphalt paver is shown in Figure 1 reproduced below:

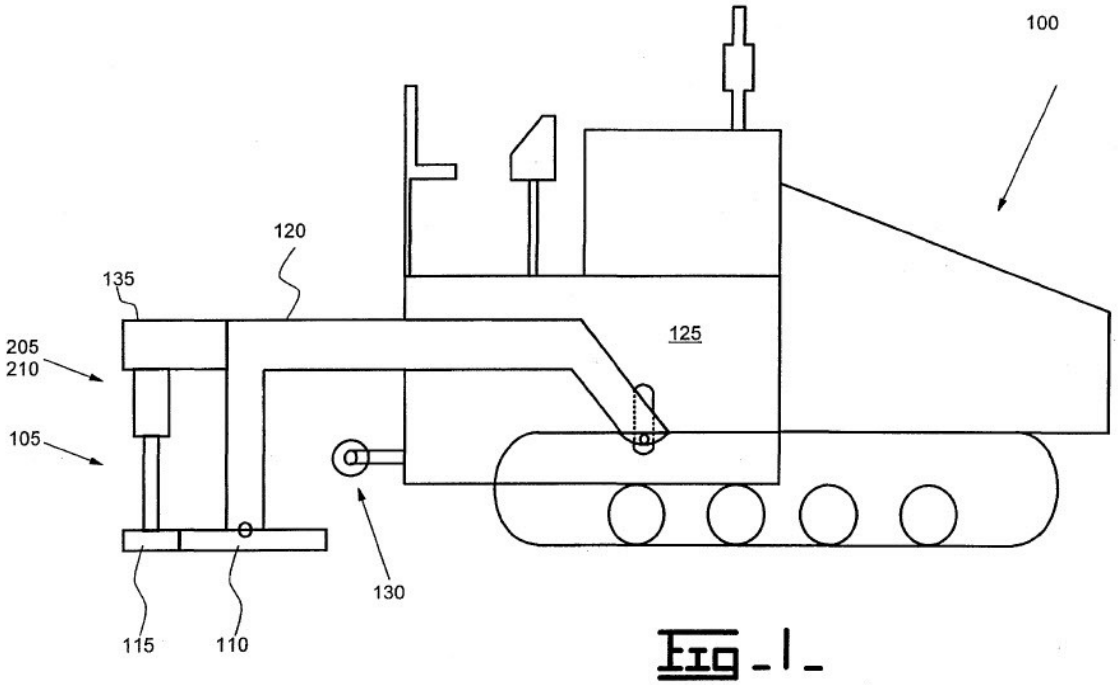

Figure 1 is a side view of an asphalt paving machine having a floating screed assembly. Ex 1006, 2:6–7. Asphalt paving machine 100 shown in Figure 1 includes floating screed assembly 105 that consists of a main screed 110

formed in two sections. *Id.* at 2:27–28. The screed assembly also includes extension screed 115 mounted to each of the main screed sections. *Id.* at 2:28–33. The right main screed section is connected to one of the paver's draft arms 120 and the other end of each draft arm is connected to paver chassis 125. *Id.* at 2:44–47. The asphalt paving machine includes electro-hydraulic control system 330 shown in Figure 3 below:

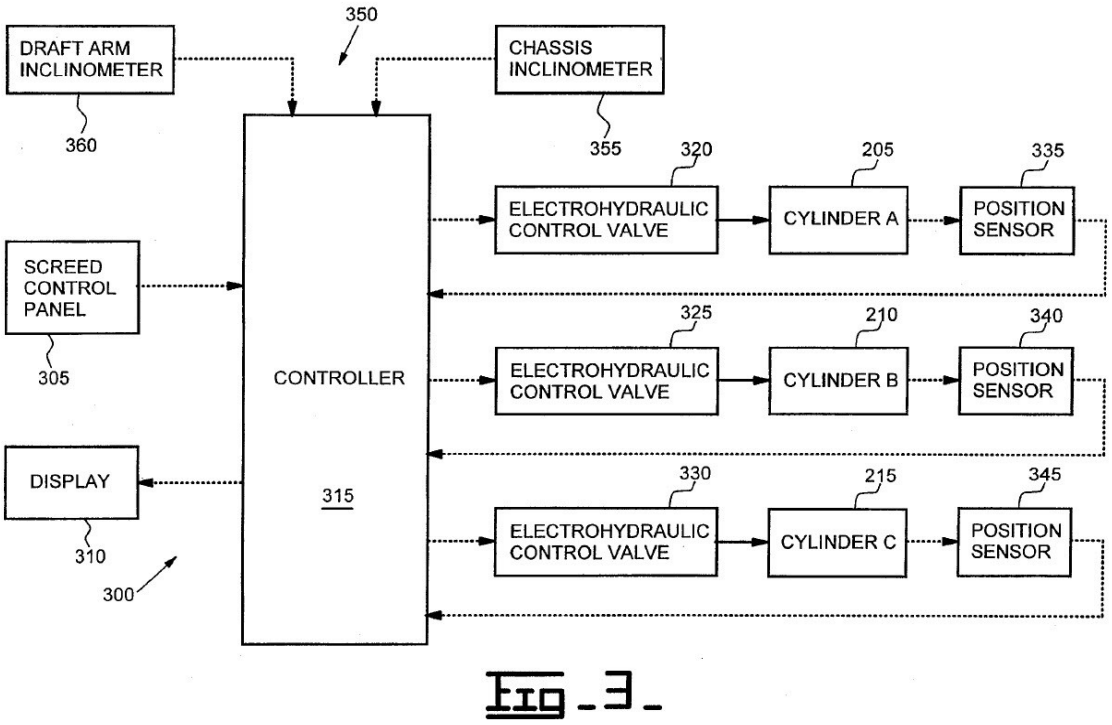

Fig. 3

Figure 3 "is a hardware block diagram of an electrohydraulic control system." Grembowicz, 2:9–10. Control system 300 shown in Figure 3 includes screed control panel 305, which provides manual actuation of the extension screed units. Ex. *Id.* at 2:62–65. The screed control panel includes switches, function keys, or other mechanisms for manually controlling raising, lowering, extending, retracting, and pivoting the extension screed units. *Id.* at 2:65–3:2. The screed control panel produces operator control signals that are received by controller 315. *Id.* at 3:4–6. In

turn, the controller produces command signals that are sent to electrohydraulic control valves (e.g., 320, 325, 330), which control the flow of hydraulic fluid to extend or retract associated hydraulic cylinders. *Id.* at 3:7–12. Position sensors (e.g., 335, 340, 345) sense the amount of cylinder extension in the hydraulic cylinders and send linear position signals to the controller. *Id.* at 3:13–16.

2. Panoushek

Panoushek is directed to "a control system for moving a header of an agricultural combine, and . . . a system operable for setting one or more positions and operating modes for the header." Panoushek, 1:5–8. The control system moves the header "in an automatic or resume mode for automatically moving the header to the one or more set positions and/or initiating operation in the set operating mode." *Id.* at 1:8–10. Control system 12 includes controller 42 operatively connected to first operator input 50, second operator input 52, and third operator input 54 as shown in Figure 1 reproduced below. *Id.* at 4:22–23, 44–47.

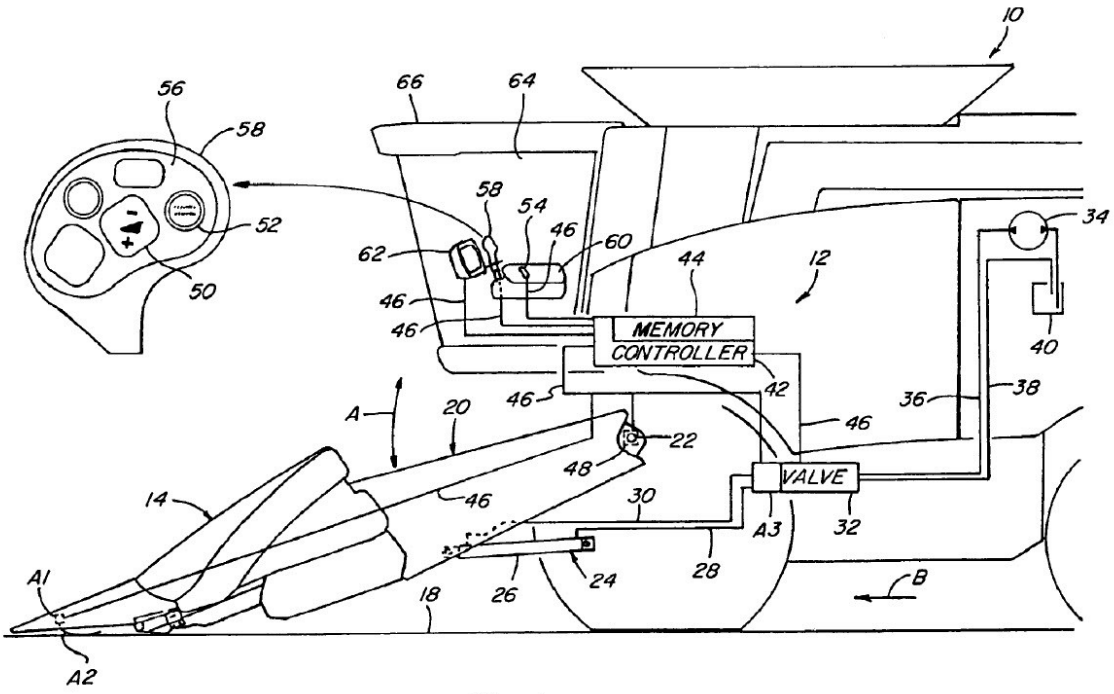

Fig. 1

Figure 1 "is a simplified side view of an agricultural combine including a control system according to the invention for moving a header of the combine." *Id.* at 3:41–43. In Panoushek's control system, second operator input 52 allows for successive input signals or commands to the controller and is also referred to as a resume switch. *Id.* at 5:11–16. Third operator input 54 is operable in a first or second manner for inputting first and second input commands or signals. *Id.* at 5:17–20. Panoushek's controller 12 is programmed for operation in an automatic state. *Id.* at 6:21–22. In this state, successive actuations of second operator input 52 are operative to move header 14 between two predetermined positions. *Id.* at 6:22–26. These positions can be pre-programmed default positions. *Id.* at 6:30–31. For example, an operator "can cause header 14 to automatically move from a raised position . . . to a lower, operational position." *Id.* at 6:33–36 (emphasis omitted).

3. Petitioner's Challenge

Petitioner maps elements from Grembowicz, Panoushek, or both to each limitation of claim 1. Pet. 17–45. As we determine that Petitioner has demonstrated that the claims at issue in the proceeding are unpatentable for the reasons discussed below, we focus our discussion of Petitioner's challenge to those items disputed by Patent Owner. First, for the limitation requiring "an operator input device configured to allow an operator of the paving machine to enter a first save command, a second save command, and a recall command," Petitioner asserts that "Panoushek's third operator input 54 is '*configured to allow an operator . . . [to] enter a first save command [and] a second save command.*'" Ex. 1001, 9:65–67; Pet. 31 (quoting Ex. 1003 ¶ 102). Petitioner asserts further that "Panoushek's resume switch 52 is 'configured to allow an operator . . . enter . . . a recall command.'" Pet. 32 (quoting Ex. 1003 ¶ 103).

Second, for the limitation requiring a controller configured to "recall one of the first set or second set of the configuration parameters from memory in response to the recall command," Petitioner asserts that "[i]n Panoushek, the controller recalls one of the first and second stored positions: 'Once the first and second predetermined positions and modes are set, successive actuations of the second input or resume switch will cause the controller to automatically move the implement between those positions and modes.'" Ex. 1001, 10:17–19; Pet. 39 (quoting Panoushek, 3:13–16) (citing Panoushek, 8:10–25; Ex. 1003 ¶ 116). Petitioner explains "[t]his resume function recalls 'set 1' or 'set 2' 'from memory' because the positions are stored in memory" and "[o]nce the positions are stored and an operator actuates the resume switch, the controller 'will read the information . . . .'"

Id. (citing Panoushek, 2:14–21, 26–41, 3:8–12, 7:40–43, 8:43–55, 10:39–57, 11:15–23, 47–12). Thus, according to Petitioner, "[a] POSITA would have understood that reading information from memory '*recall*[s]' the information from memory. *Id.* (citing Ex. 1003 ¶ 116).

Third, regarding the reasoning in support of the proposed combination, Petitioner asserts that a POSITA "would have been motivated to modify Grembowicz in view of Panoushek such that an operator of Grembowicz's paving machine would have been able to enter 'a first save command, a second save command and a recall command,' as taught by Panoushek."[4] Pet. 42 (citing Ex. 1003 ¶¶ 122–131) (emphasis omitted). According to Petitioner, "Panoushek provides explicit reasons to implement save/recall to automatically adjust a work machine," because "Panoushek states that 'to reduce the effort required by the operator, it is useful to automate as many tasks performed by the operator as possible.'" *Id.* (citing Ex. 1003 ¶ 123; Panoushek, 1:13–21). Petitioner provides several reasons for the proposed modification. *Id.* at 42–45. For example, Petitioner asserts that "[a] POSITA would have appreciated that saving a set of desired machine parameters from one job site, in order to later recall them at another job site, would allow operators to quickly transition between the multiple configurations required to pave various contours of a road or different jobsites." *Id.* at 43 (citing Grembowicz, 1:41–44; Ex. 1003 ¶ 128).

[4] We note that Petitioner refers to Buschmann and Rutz as evidence of what would have been known to a POSITA. Pet. 42–43.

4. Patent Owner's Response

Patent Owner advances three arguments in support of its position that Grembowicz and Panoushek do not render claim 1 obvious. PO Resp. 20–36, 37–60.

First, Patent Owner contends that "Panoushek fails to disclose a 'recall command,' . . . because its 'resume switch' generates signals or commands that are only indicative of whether the resume switch has been actuated or is turned on—i.e., it does not generate a 'command to recall a desired set of parameters using an assigned identifier.'" PO Resp. 20–21 (citing Ex. 2007 ¶ 92). According to Patent Owner, "Panoushek's resume switch 52 is 'successively momentarily actuable for inputting successive input signals or commands to controller 42'" and '"[c]ontroller 42 is programmed to operate in an automatic state such that successive actuations of second operator input 52 will serve as input commands or signals to automatically . . . move header 14 successively between two predetermined positions.'" *Id.* at 21 (quoting Panoushek, 5:11–14, 6:21–27). Based on these observations, Patent Owner asserts that "the 'input commands or signals' for moving Panoushek's header 14 between two predetermined positions are generated by repeatedly actuating the resume switch 52 (i.e., the operator pushes the same button multiple times)." *Id.* at 21–22 (citing Ex. 2007 ¶ 94). Thus, Patent Owner contends that "the input command or signal generated by resume switch 52 is only indicative of whether the resume switch has been actuated or turned on, and it is not a command to recall a desired set of parameters using an assigned identifier." *Id.* at 22 (citing Ex. 2007 ¶ 95).

Second, Patent Owner contends that "[t]he claim requires the controller to be capable of recalling, at any given time, either the first set or the second set of parameters in response to the recall command." PO Resp. 26 (citing Ex. 2007 ¶ 105). According to Patent Owner, "Panoushek's system is only capable of recalling one possible set of information in response to its 'resume switch,'—i.e., the information associated with a predetermined 'toggle 1' or 'toggle 2' condition dictated by its 'toggling program routine.'" *Id.* (quoting Panoushek, 6:48–55, 7:43–55, 9:49–57; Ex. 2007 ¶ 105). In support of this contention, Patent Owner reiterates that "the proper construction of the 'recall command' in the '871 patent is a 'command to recall a desired set of parameters using an assigned identifier.'" *Id.* at 27 (citing PO Resp. 15–17). Patent Owner asserts further that

> the plain language of claim 1 requires the following: "a first set of the configuration parameters," "a second set of the configuration parameters," and a "controller . . . configured to . . . recall one of the first set or second set of the configuration parameters . . . in response to the recall command."

Id. (citing Ex. 1001, 9:51–10:25; Ex. 2007 ¶ 107). In view of this claim language, Patent Owner asserts that "a POSITA would understand claim 1 to require two parameter sets (i.e., the 'first set' and the 'second set') and a controller configured to recall either one of 'the first set or the second set of configuration parameters from memory' in response to a given recall command." *Id.* (citing Ex. 2007 ¶ 107).

Third, Patent Owner contends that "Petitioners[']asserted motivation to combine Grembowicz and Panoushek is flawed because it is based on improper applications of the law regarding obviousness and relies on the testimony of someone not qualified to testify about a POSITA under

Petitioners' own definition of a POSITA." PO Resp. 37; *see also id.* at 58–60. In support, Patent Owner asserts that

> The asserted combination of Grembowicz and Panoushek would not have been a mere incremental improvement to Grembowicz involving the combination of known prior art elements, but instead is the product of Petitioners' hindsight reasoning that it would have allegedly been obvious to couple Panoushek's "resume function"—a function designed to execute typical maneuvers of an agricultural harvester—with Grembowicz's paving machine.

Id. at 38 (citing Panoushek, 1:22–28, 6:48–55, Ex. 2007 ¶ 130); *see also id.* at 53–57. Patent Owner attempts to distinguish the facts of this case from those in *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57 (1969) because "Panoushek's 'save/recall' control system (i.e., its 'resume' function) is not 'essentially the same' as what is claimed in the '871 patent." *Id.* at 41–42.

Patent Owner contends further that "Petitioners' asserted combination would take Grembowicz's paving machine—which Petitioners admit has none of the 'save' and 'recall features in the '871 claims (*see* Pet. 29)—and combine it with Panoushek's 'resume function,' which would not be simply 'convenient' to do." *Id.* at 43 (citing Ex. 2007 ¶ 134). According to Patent Owner,

> the proposed modification of Grembowicz would be a significant exercise, as a POSITA would have needed to (1) introduce "an operator input device configured to allow an operator of the paving machine to enter a first save command, a second save command and a recall command," which Grembowicz does not have, (2) program Grembowicz's controller to store positions measured by its sensors in response to save commands, which Grembowicz is not configured to do, and (3) and program Grembowicz's controller to automatically adjust the actuators of

> the paving machine in response to a recall command, which Grembowicz is also not configured to do.

Id. at 44 (citing Pet. 45; Ex. 2007 ¶¶ 134–140). In support, Patent Owner asserts that "it does not follow that a POSITA would have necessarily found Panoushek's automation technique (i.e., its 'resume switch' and toggling routine) obvious to implement in Grembowicz's paving machine in view of their different constructions, typical operations, and working environments" because

> Panoushek's system can only store two saved positions and must toggle between them using a particular toggling routine that would prevent the operator from either (a) saving multiple useful sets of parameters from various jobsites or (b) successively recalling the same parameter set in common paving situations without first cycling through different undesired parameter sets.

Id. at 46 (citing Ex. 2007 ¶¶ 142–143).

Patent Owner concludes this third argument by contending that "the operator would have to cycle through the other saved parameter set before being able to recall the desired parameter set for that particular jobsite" and that "recalling undesired parameters (i.e., requiring the machine to automatically move to undesired configurations) not only wastes time, but increases the risk of damaging a machine or things around it." PO Resp. 50–51 (citing Ex. 2007 ¶¶ 149–150). Patent Owner asserts further that "[a] POSITA would also appreciate that allowing a machine to automatically configure itself using undesired parameters raises safety issues for machine operators in general, and particularly when an operator may not be sure of the state into which they are allowing the machine to automatically configure itself." *Id.* at 52 (citing Ex. 2007 ¶ 151).

5. Petitioner's Reply

In reply to the Patent Owner Response, Petitioner reiterates its position that Dr. Ehsani is an expert qualified to testify in this proceeding. *See* Pet. Reply 2–3. Petitioner notes that Patent Owner does not contest Petitioner's definition of the level of ordinary skill in the art. *Id.* at 3–4. Petitioner then reiterates their position that Patent Owner's claim construction is incorrect. *Id.* at 5–8.

Petitioner also argues that even if we adopt Patent Owner's construction of the claim term "recall command," Panoushek meets this limitation and that even if we interpret claim 1 to require recall of the first and second set of parameters at any given time, Panoushek would still read on claim 1. Pet. Reply 8–16. Petitioner makes several arguments in support of its rationale for the proposed combination of Grembowicz and Panoushek. *Id.* at 16–26. For example, Petitioner reiterates Dr. Ehsani's testimony regarding explicit support for the proposed combination, highlights portions of Dr. Sorensen's testimony, which Petitioner asserts support its position, and responds to Patent Owner's contentions that the proposed modification increase the risk of damaging the Grembowicz's paving machine or waste time. *Id.* at 17, 20–21, 23–25.

6. Patent Owner's Sur-reply

In response to Petitioner's Reply, Patent Owner reiterates its arguments in support of its claim construction (i.e., that each of the command limitations should be interpreted to require identifiers) and its interpretation of claim 1 as requiring the capability to recall at any given time either the first or second set of parameters. PO Sur-reply 2–11. Petitioner also reiterates its arguments that the proposed combination would

not have been obvious. *Id.* at 11–12. Patent Owner argues that Petitioner's reliance on Rutz, Buschmann, and Dr. Sorenson's testimony is irrelevant, because "Petitioner did not cite any of Rutz, Buschmann, and Dr. Sorenson in its petition mappings for the independent claim elements." *Id.* at 13. Then, Patent Owner reiterates its arguments distinguishing *Anderson's-Black Rock*. *Id.* at 14–15.

7. Analysis

Having considered Petitioner's assertions, Patent Owner's arguments, the full record developed during trial, and in view of our construction of the claim terms "first save command," "second save command," and "recall command" as not requiring use of an identifier, we determine Petitioner has shown claim 1 to be unpatentable.

Patent Owner's first argument that Panoushek does not disclose a "recall command" as claimed, hinges on our adoption of Patent Owner's construction of the claim term "recall command" as requiring the use of identifiers. For the reasons discussed above in Part III.B, we do not adopt this definition. Thus, Patent Owner's first argument is unconvincing.

Patent Owner's second argument is also unconvincing because it hinges on an interpretation of the claim language at issue as requiring recall "at any given time, either the first set or the second set of parameters in response to the recall command." PO Resp. 26 (citing Ex. 2007 ¶ 105). We, however, do not understand this claim language to be so limited. Rather, as noted by Patent Owner, claim 1 merely requires "recall [of] *one* of the first set or second set of the configuration parameters . . . in response to the recall command." *Id.* (citing Ex. 1001, 9:51–10:25; Ex. 2007 ¶ 107) (emphasis added). Patent Owner's explanation of how Panoushek's toggle operates

demonstrates that Panoushek's controller recalls either a first set or a second set of parameters based on the state of the toggle switch. *See* PO Resp. 30–33. Thus, Panoushek meets the limitation at issue.

Turning to Patent Owner's third argument, we first note that for the reasons discussed above in Part III.A, we determine that Dr. Ehsani qualifies as an expert in this proceeding and we credit his testimony. We do not find Petitioner's reasoning in support of the proposed combination to be based on improper hindsight reasoning. Rather, we find Dr. Ehsani's testimony that "Panoushek provides explicit reasons to implement save/recall to automatically adjust a work machine" credible because Panoushek explicitly states that "to reduce the effort required by the operator, it is useful to automate as many tasks performed by the operator as possible." Ex. 1003 ¶ 123; Panoushek, 1:19–21. Further, although, Patent Owner is correct that the reasoning approved in *Anderson's-Black Rock* requires that the combined feature be "essentially the same" as the claimed feature, we find Patent Owner's attempts to distinguish *Anderson's-Black Rock* unconvincing because, as we discussed in the preceding paragraph, Panoushek's controller 42 meets the limitation at issue, and thus, is "essentially the same" as that limitation. *See Anderson's-Black Rock*, 396 U.S. at 59.

Finally, Patent Owner's argument that the proposed modification would require substantial modification of Grembowicz's paving machine and would not be convenient is unconvincing because Patent Owner has not shown that implementation of the proposed modification is beyond the skill one skilled in the art. Further, Patent Owner's contention that Panoushek can only store two save positions and toggle between them is unconvincing because claim 1 only requires that two sets of parameters be saved. Ex.

1001, 9:51–10:25. Patent Owner's argument that the operator would have to cycle through an undesired parameter set in order to recall the desired parameter set is also unconvincing because such cycling is nothing more that the press of a button or flip of a toggle switch, not actual repositioning of the machine through an undesired position to reach a desired position. PO Resp. 50–51. *See, e.g.*, Panoushek, 6:21–26.

Petitioner's findings with respect to the remaining limitations of claim 1 are not contested by Patent Owner. *See* PO Resp. 19–60. We have reviewed Petitioner's arguments and the underlying evidence in support of these findings. We are persuaded that Petitioner has sufficiently shown that these limitations are met by the combined teachings of Grembowicz and Panoushek. Patent Owner also does not contest Petitioner's findings regarding the similar limitations in claims 9 and 13 and the additional limitations in dependent claims 6 and 17. *See id.* We have reviewed Petitioner's arguments and the underlying evidence in support of these findings. We are persuaded that Petitioner has sufficiently shown that these limitations are met by the combined teachings of Grembowicz and Panoushek.

For these reasons, we determine that Petitioner has demonstrated, by a preponderance of evidence, that claim 1 would have been obvious in view of the combined teachings of Grembowicz and Panoushek. As noted above, Petitioner's contentions regarding claims 9 and 13 and Patent Owner's response thereto are substantially similar to the parties' contentions and response for claim 1. *Compare* Pet. 18–45, *with* Pet. 50–55; *compare* PO

Resp. 20–33, *with* PO Resp. 34–36.[5] Patent Owner does not provide separate arguments for the patentability of claims 6 and 17. PO Resp. 36. Accordingly, we also determine that Petitioner has demonstrated, by a preponderance of evidence that claims 6, 9, 13 and 17 would have been obvious in view of the combined teachings of Grembowicz and Panoushek.

E. Obviousness of Claims 2, 3, and 14 in view of the combined teachings of Grembowicz, Panoushek and Buschmann

Petitioner maps elements from Grembowicz, Panoushek, or Buschmann to each limitation of claims 2, 3, and 14. Pet. 58–64. Petitioner also sets forth reasoning in support of the proposed combination. *Id.* We have reviewed Petitioner's arguments and the underlying evidence in support of these findings.

Patent Owner does not present separate arguments contesting Petitioner's challenge to claims 2, 3, and 14. Instead, Patent Owner contends that

> Because claims 2 and 3 depend from claim 1, and because Petitioners do not rely on Buschmann for any of the claim 1 elements not disclosed or rendered obvious by the Grembowicz-Panoushek combination, the asserted combination of Grembowicz, Panoushek, and Buschmann fails to disclose or render obvious every element of claims 2 and 3.

PO Resp. 61. For claim 14, Patent Owner similarly contends that

> Because claim 14 depends from claim 13, and because Petitioners do not rely on Buschmann for any of the claim 13 elements not disclosed or rendered obvious by the Grembowicz-Panoushek combination, the asserted combination of

[5] We note that Patent Owner does not separately address claim 9, but includes it with the discussion of claim 1. PO Resp. 20–33.

> Grembowicz, Panoushek, and Buschmann fails to disclose or render obvious every element of claim 14.

Id. at 62. In other words, Patent Owner asserts that because Buschmann does not cure the alleged deficiencies in the challenge to independent claims 1 and 13 this challenge should also fail. As we find no such deficiencies in the challenge to claims 1 and 13 for the reasons discussed in Part II.D of this decision, Patent Owner's argument is unconvincing.

Having considered Petitioner's assertions and the full record developed during trial, we determine Petitioner has demonstrated by a preponderance of evidence that claims 2, 3, and 14 are obvious over the combined teachings of Grembowicz, Panoushek, and Buschmann.

F. Obviousness of claim 5 in view of the combined teachings of Grembowicz, Panoushek, and Lossow

Petitioner maps elements from Grembowicz, Panoushek, and Lossow to each limitation of claim 5. Pet. 64–68. Petitioner also sets forth reasoning in support of the proposed combination. *Id.* We have reviewed Petitioner's arguments and evidence in support of these findings.

Patent Owner does not present separate arguments contesting Petitioner's challenge to claim 5. Instead, Patent Owner asserts that

> Because claim 5 depends from claim 1, and because Petitioners do not rely on Buschmann for any of the claim 5 elements not disclosed or rendered obvious by the Grembowicz-Panoushek combination, the asserted combination of Grembowicz, Panoushek, and Lossow fails to disclose or render obvious every element of claim 5.

PO Resp. 63. In other words, Patent Owner asserts that because Lossow does not cure the alleged deficiencies in the challenge to independent claim 1, this challenge should also fail. As we find no such deficiencies in the

challenge to claim 1 for the reasons discussed in Part II.D of this decision, Patent Owner's argument is unconvincing.

Having considered Petitioner's assertions and the full record developed during trial, we determine Petitioner has demonstrated by a preponderance of evidence that claim 5 is obvious over the combined teachings of Grembowicz, Panoushek, and Lossow.

G. Obviousness of claims 8 and 12 in view of the combined teachings of Grembowicz, Panoushek, and Davin

Petitioner maps elements from Grembowicz, Panoushek, or Davin to each limitation of claims 8 and 12. Pet. 68–73. Petitioner also sets forth reasoning in support of the proposed combination. *Id.* We have reviewed Petitioner's arguments and evidence in support of these findings.

Patent Owner does not present separate arguments contesting Petitioner's challenge to claims 8 and 12. Instead, Patent Owner asserts that

> Because claims 8 and 12 depend from claim 1 and 9, respectively, and because Petitioners do not rely on Davin for any of the claim 1 or claim 9 elements not disclosed or rendered obvious by the Grembowicz-Panoushek combination, the asserted combination of Grembowicz, Panoushek, and Davin fails to disclose or render obvious every element of claims 8 and 12.

PO Resp. 64. In other words, Patent Owner asserts that because Davin does not cure the alleged deficiencies in the challenge to independent claims 1 and 9 this challenge should also fail. As we find no such deficiencies in the challenge to claims 1 and 9 for the reasons discussed in Part II.D of this decision, Patent Owner's argument is unconvincing.

Having considered Petitioner's assertions and the full record developed during trial, we determine Petitioner has demonstrated by a

preponderance of evidence that claims 8 and 12 are obvious over the combined teachings of Grembowicz, Panoushek, and Davin.

H. Obviousness of claims 4, 15, and 16 based on the combined teachings of Grembowicz, Panoushek, Buschmann, and Emerson

Petitioner maps elements from Grembowicz, Panoushek, Buschmann, or Emerson to each limitation of claims 4, 15, and 16. Pet. 73–77. Petitioner also sets forth reasoning in support of the proposed combination. *Id.* We have reviewed Petitioner's arguments and evidence in support of these findings.

Patent Owner does not present separate arguments contesting Petitioner's challenge to claims 4, 15, and 16. Instead, Patent Owner asserts that

> Because claims 4, 15, and 16 depend from claims 1 and 13, and because Petitioners do not rely on Emerson for any of the claim 1 or claim 13 elements not disclosed or rendered obvious by the Grembowicz-Panoushek combination, the asserted combination of Grembowicz, Panoushek, Buschmann, and Emerson fails to disclose or render obvious every element of claims 4, 15, and 16.

PO Resp. 65. In other words, Patent Owner asserts that because neither Buschmann nor Emerson cure the alleged deficiencies in the challenge to independent claims 1 and 13 this challenge should also fail. As we find no such deficiencies in the challenge to claims 1 and 13 for the reasons discussed in Part II.D of this decision, Patent Owner's argument is unconvincing.

Having considered Petitioner's assertions and the full record developed during trial, we determine Petitioner has demonstrated by a

preponderance of evidence that claims 4, 15, and 16 are obvious over the combined teachings of Grembowicz, Panoushek, Buschmann, and Emerson.

I. Summary

For the reasons discussed above, we find that Petitioner has demonstrated, by a preponderance of evidence that claims 1–6, 8, 9, and 12–17 are unpatentable for the reasons set forth in the table below:

Claims	35 U.S.C. §	References	Claims Shown Unpatentable	Claims Not shown Unpatentable
1, 6, 9, 13, 17	103	Grembowicz, Panoushek	1, 6, 9, 13, 17	None
2, 3, 14	103	Grembowicz, Panoushek, Buschmann	2, 3, 14	None
5	103	Grembowicz, Panoushek, Lossow	5	None
8, 12	103	Grembowicz, Panoushek, Davin	8, 12	None
4, 15, 16	103	Grembowicz, Panoushek, Buschmann, Emerson	4, 15, 16	None
Overall Outcome			1–6, 8, 9, 12–17	None

IV. CONTINGENT MOTION TO AMEND

Patent Owner requests that if "the Board finds any of original claims [1–6, 8, 9, or 12–17][6] unpatentable in this proceeding, . . . the Board grant this motion to amend with respect to each corresponding substitute claim presented herein, namely claims 21–36." PO MTA 1. Specifically, Patent Owner requests that claim 1 be replaced with claim 21, claims 4–6 be replaced with claims 22–24, claims 8 and 9 be replaced with claims 26 and 27, claims 12 and 13 be replaced with claims 30 and 31, and claims 16 and 17 be replaced with claims 32 and 33.[7] The proposed substitute claims read as follows:

> 21. A paving machine comprising:
>
> a hopper adapted for storing a paving material on the paving machine;
>
> a screed assembly having a plurality of adjustable components including a main screed section with a left and a right screed section connected to one another along a

[6] PO MTA refers to claims 1, 4–13, and 16–20, however, the claims at issue in this proceeding are 1–6, 8, 9, and 12–17.

[7] Patent Owner does not propose substitute claims for claims 2, 3, 14 and 15. *See* PO MTA App. A. As noted above (in note 1), Patent Owner proposes substitute claims for claims 7, 10, 11, and 18–20. *See* PO MTA 1, App. A, vi, xi, xvi–xvii. These claims, however, are not challenged in this proceeding. Accordingly, we do not consider the proposed amendments to these claims. *See* 35 U.S.C. § 316(d). Should Patent Owner wish to pursue amendment of any claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

longitudinal centerline and extending laterally from each other, and adjustable screed extensions provided adjacent to one or more of the screed sections, the plurality of adjustable components being configured to adjust the screed assembly into a plurality of different configurations associated with set-up of the screed assembly prior to a start of a new paving operation;

a conveyor system configured to move paving material from the hopper to the screed assembly;

a plurality of actuators, each actuator being associated with a respective adjustable component of the screed assembly and being supported and configured to adjust the respective adjustable component into different configurations;

a plurality of sensors each configured to sense a configuration parameter of a respective adjustable component of the screed assembly indicative of the configuration of the respective adjustable component; ~~and~~

an operator input device configured to allow an operator of the paving machine to enter a first save command, a second save command and a recall command; and

a controller in communication with the operator input device and the sensors and configured to control operation of the actuators, the controller being configured to:

save in memory in response to the first save command (1) a first set of the configuration parameters sensed by the plurality of sensors and corresponding to the configurations of the adjustable components of the screed assembly that exist at the time of entry of the first save command in association with a first paving operation during which the paving material delivered to the screed assembly by the conveyor system is spread and compacted into a layer, the first set of configuration parameters being determined by the operator to be applicable for a set-up of the screed assembly prior to a later paving operation, and (2) a first set of operation parameters indicative of an operating state of an electronically controlled system of the paving machine that requires adjustment during the first paving operation to enable the spreading and compacting of the paving material by the screed assembly;

assign a first unique identifier to a first set of parameters comprising the first set of configuration parameters and the first set of operation parameters;

save in memory in response to the second save command (1) a second set of the configuration parameters sensed by the plurality of sensors and corresponding to the configurations of the adjustable components ~~component~~ of the screed assembly then being used that exist at the time of entry of the second save command in association with a second paving operation during which the paving material delivered to the screed assembly by the conveyor system is spread and compacted into a layer, the second set of configuration parameters being determined by the operator to be applicable for a set-up of the screed assembly prior to a later paving operation, and (2) a second set of operation parameters indicative of an operating state of an electronically controlled system of the paving machine that requires adjustment during the second paving operation to enable the spreading and compacting of the paving material by the screed assembly;

assign a second unique identifier to a second set of parameters comprising the second set of configuration parameters and the second set of operation parameters;

recall, using the first or second unique identifier, either one of the first set or second set of the configuration parameters and the corresponding respective first set or second set of the operation parameters from memory in response to the recall command in association with a third paving operation, wherein the recall command includes the respective first or second unique identifier; and

adjust automatically the adjustable components of the screed assembly applicable for a set-up of the screed assembly prior to ~~in associate with~~ the third paving operation to correspond to the configuration parameters included in the recalled first set or second set of the configuration parameters, and adjust automatically the operating state of the respective electronically controlled system requiring adjustment in accordance with the recalled corresponding first set or second set of the operation parameters during the third paving operation.

22. The paving machine of ~~claim 3~~ claim 21 wherein the operation parameters include parameters indicative of an operating state of a tamper bar drive mechanism.

23. The paving machine of ~~claim 1~~ claim 21 wherein the screed assembly is pivotally connected to a frame of the paving machine by a pair of tow arms and the plurality of adjustable components includes the tow arms, wherein the plurality of actuators includes a pair of tow arm actuators each configured and supported to pivot a respective tow arm; wherein the plurality of sensors includes a tow arm position sensor configured and arranged to sense a position of one or both of the tow arms and wherein the configuration parameters included in the recalled first set or second set of the configuration parameters include a position of one or both of the tow arms.

24. The paving machine of ~~claim 1~~ claim 21 wherein the screed extensions are ~~assembly includes~~ a pair of laterally movable screed extensions each extending from an opposing side of [[a]] the main screed section ~~and the plurality of adjustable components includes the screed extensions~~, wherein the plurality of actuators includes screed width actuators each configured and supported to laterally move a respective screed extension, wherein the plurality of sensors include screed width sensors each configured and arranged to sense a width of the screed assembly as defined by lateral positions of each of the screed extensions and wherein the configuration parameters included in the recalled first set or second set of the configuration parameters include the width of the screed assembly.

26. The paving machine of ~~claim 1~~ claim 21 wherein the screed assembly is pivotable about [[a]] the longitudinal centerline so as to provide an adjustable crown position and the plurality of adjustable components include the pivotable screed assembly, wherein the plurality of actuators include a crown position actuator for pivoting the screed assembly about the longitudinal centerline, wherein the plurality of sensors includes a crown position sensor configured and arranged to sense the crown position and wherein the configuration parameters included in the recalled first set or second set of the configuration parameters include the crown position.

27. A paving machine comprising:

an operator input device configured to allow an operator of the paving machine to enter a first save command, a second save command, and a recall command;

a hopper adapted for storing a paving material on the paving machine;

a screed assembly having a plurality of adjustable components including a main screed section with a left and a right screed section connected to one another along a longitudinal centerline and extending laterally from each other, and adjustable screed extensions provided adjacent to one or more of the screed sections, each of the plurality of adjustable components being configured to be adjustable into different configurations associated with set-up of the screed assembly prior to a start of a new paving operation;

a conveyor system configured to move paving material from the hopper to the screed assembly;

a plurality of actuators, each actuator being associated with a respective adjustable component of the screed assembly and being supported and configured to adjust the respective adjustable component into different configurations;

a plurality of sensors each configured to sense a configuration parameter of a respective adjustable component of the screed assembly indicative of the configuration of the respective adjustable component; and

a controller in communication with the operator input device and the sensors and configured to:

save in memory in response to the first save command (1) a first set of the configuration parameters sensed by the plurality of sensors and corresponding to the configurations of the adjustable components of the screed assembly that exist at the time of entry of the first save command in association with a first paving operation during which the paving material delivered to the screed assembly by the conveyor system is spread and compacted into a layer, the first set of configuration parameters being determined by the operator to be applicable for a set-up of the screed assembly prior to a later paving operation, and (2) a first set of operation parameters indicative of an operating state of an electronically controlled system of the paving machine that

requires adjustment during the first paving operation to enable the spreading and compacting of the paving material by the screed assembly,

assign a first unique identifier to a first set of parameters comprising the first set of configuration parameters and the first set of operation parameters,

save in memory in response to the second save command (1) a second set of the configuration parameters sensed by the plurality of sensors and corresponding to the configurations of the adjustable components of the screed assembly then being used that exist at the time of entry of the second save command in association with a second paving operation during which the paving material delivered to the screed assembly by the conveyor system is spread and compacted into a layer, the second set of configuration parameters being determined by the operator to be applicable for a set-up of the screed assembly prior to a later paving operation, and (2) a second set of operation parameters indicative of an operating state of an electronically controlled system of the paving machine that requires adjustment during the second paving operation to enable the spreading and compacting of the paving material by the screed assembly,

assign a second unique identifier to a second set of parameters comprising the second set of configuration parameters and the second set of operation parameters,

recall a first desired set of saved parameters, using the first unique identifier, the first desired set of saved parameters being the first set of the configuration parameters and the corresponding first set of the operation parameters, from memory in response to the recall command entered through the operator input device and automatically adjust the adjustable components of the screed assembly using the respective actuators into a configuration that corresponds to the configuration parameters in the recalled saved first set of the configuration parameters,

adjust automatically the operating state of the respective electronically controlled system of the paving machine that requires adjustment in accordance with the recalled corresponding first set of the operation parameters during a third paving operation,

recall a second desired set of saved parameters, using the second unique identifier, the second desired set of saved parameters being the second set of the configuration parameters and the corresponding second set of the operation parameters, from memory in response to a second recall command entered through the operator input device and automatically adjust the adjustable components of the screed assembly using the respective actuators into a configuration that corresponds to the configuration parameters in the recalled saved second set of the configuration parameters, and

adjust automatically the operating state of the respective electronically controlled system of the paving machine that requires adjustment in accordance with the recalled corresponding second set of the operation parameters during a fourth paving operation.

30. The paving machine of ~~claim 9~~ claim 27 wherein the screed assembly is pivotable about [[a]] the longitudinal centerline so as to provide an adjustable crown position and the plurality of adjustable components includes the pivotable screed assembly, wherein the plurality of actuators include a crown position actuator for pivoting the screed assembly about the longitudinal centerline, wherein the plurality of sensors includes a crown position sensor configured and arranged to sense the crown position and wherein the configuration parameters in the recalled saved first set or second set of the configuration parameters include the crown position.

31. A method of operating a paving machine including a screed assembly having a plurality of adjustable components including a main screed section with a left and a right screed section connected to one another along a longitudinal centerline and extending laterally from each other, and adjustable screed extensions provided adjacent to one or more of the screed sections, a hopper adapted for storing a paving material on the paving machine, and a conveyor system configured to move paving material from the hopper to the screed assembly, the method comprising the steps of:

sensing a plurality of configuration parameters each indicative of a respective configuration of one of the adjustable

components of the screed assembly of the paving machine during a paving operation;

saving in memory (1) a first set of the sensed configuration parameters corresponding to the configurations of the adjustable components of the screed assembly that exist at the time of entry of a first save command by an operator of the paving machine in association with a first paving operation, the first set of configuration parameters being determined by the operator to be applicable for a set-up of the screed assembly prior to a later paving operation, and (2) a first set of operation parameters indicative of an operating state of an electronically controlled system of the paving machine that requires adjustment during the first paving operation;

assigning a first unique identifier to a first set of parameters comprising the first set of configuration parameters and the first set of operation parameters;

saving in memory (1) a second set of the sensed configuration parameters corresponding to the configurations of the adjustable components of the screed assembly that exist at the time of entry of a second save command by an operator of the paving machine in association with a second paving operation in response to a second save command entered by an operator of the paving machine, the second set of configuration parameters being determined by the operator to be applicable for a set-up of the screed assembly prior to a later paving operation, and (2) a second set of operation parameters indicative of an operating state of an electronically controlled system of the paving machine that requires adjustment during the second paving operation;

assigning a second unique identifier to a second set of parameters comprising the second set of configuration parameters and the second set of operation parameters;

recalling, using the first or second unique identifier, either one of the first set or second set of the sensed configuration parameters and the corresponding respective first set or second set of the operation parameters from memory in response to a first recall command entered by an operator of the paving machine, wherein the first recall command includes the respective first or second unique identifier;

> adjusting automatically the adjustable components of the screed assembly using associated actuators to correspond to the configuration parameters included in the recalled first set or second set of the sensed configuration parameters, and adjusting automatically the operating state of the respective electronically controlled system requiring adjustment in accordance with the recalled corresponding first set or second set of the operation parameters during a third paving operation; and
>
> operating the paving machine in a third paving operation with the screed assembly having the recalled first or second set of the sensed configuration parameters.
>
> 32. The method of ~~claim 15~~ claim 31 wherein the operation parameters include parameters indicative of an operating state of a tamper bar drive mechanism.
>
> 33. The method of ~~claim 13~~ claim 31 wherein the screed assembly is pivotally connected to a frame of the paving machine by a pair of tow arms and the plurality of adjustable components includes the tow arms, and wherein the configuration parameters included in the recalled first set or second set of the configuration parameters include a position of the tow arms.

A. Procedural Requirements

"Before considering the patentability of any substitute claims, however, the Board first must determine whether the motion to amend meets the statutory and regulatory requirements set forth in 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121." *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 15 at 4 (PTAB Feb. 25, 2019) (precedential).

The first requirement is that the Motion to Amend propose a reasonable number of substitute claims. 35 U.S.C. § 316(d)(1)(B). "There is a rebuttable presumption that a reasonable number of substitute claims per challenged claim is one (1) substitute claim. 37 C.F.R. § 42.121(a)(3)." *Lectrosonics*, Paper 15 at 4. The Petition challenges fourteen (14) claims. The Motion To Amend proposes sixteen (16) claims; however, six of the

proposed substitute claims do not correspond to a challenged claim. *See supra* notes 1, 7. As a result, Patent Owner proposes ten (10) substitute claims that correspond to one of the fourteen (14) challenged claims. Thus, Patent Owner does not propose more than one substitute claim per cancelled claim. As Patent Owner effectively proposes less substitute claims than challenged claims, we determine that Patent Owner has demonstrated that the number of proposed claims is reasonable.

The second requirement is determining whether the proposed amended claims respond to a ground of unpatentability involved in this trial. *Lectrosonics*, Paper 15 at 5. Patent Owner asserts that "every proposed amendment is responsive to a ground of unpatentability in this trial." PO MTA 1. Petitioner does not contest Patent Owner's assertion. *See generally* Pet. Opp. to MTA.

We agree with Patent Owner that the Motion to Amend responds to the grounds of unpatentability by further limiting the recitations pertaining to the first and second sets of parameters. Specifically, for substitute claims 21 and 31 (which correspond to original claims 1 and 13), the Motion to Amend adds limitations pertaining to first and second sets of operation parameters, then it adds limitations directed to first and second set of parameters, which include first and second sets of configuration parameters and first and second sets of operation parameters, respectively. PO MTA App. A, iii–iv, xiii–xiv. For substitute claim 27 (which corresponds to original claim 9), the Motion To Amend adds similar limitations include adding a second set of configuration parameters. In addition, the Motion To Amend also adds limitations requiring assigning first and second unique identifiers. *Id.* The Motion To Amend also adds the requirement of first and

second unique identifiers to each of the independent proposed substitute claims (i.e., claims 21, 17, and 31). *Id.* As the question of whether the original independent claims require identifiers is clearly at issue in this proceeding, we determine that Patent Owner has demonstrated that the proposed substitute claims are responsive to the grounds of unpatentability involved in this trial.

The third requirement is that "[a] motion to amend may not present substitute claims that enlarge the scope of the claims of the challenged patent or introduce new subject matter. 35 U.S.C. § 316(d)(3); 37 C.F.R. § 41.121(a)(2)(ii)." *Lectrosonics*, Paper 15 at 6.

Noting that "[c]laims 21 and 27 each recite a controller configured to '*assign a first [/second] unique identifier to a first [/second] set of parameters*,' and claim 31 recites '*assigning a first [/second] unique identifier to a first [/second] set of parameters*,'" Petitioner asserts that "[t]he substitute claims are unpatentable for lack of written description," because "the '871 patent does not have written description support for unique identifiers." Pet. Opp. to MTA 24–25. According to Petitioner, "[a] unique identifier is a specific type of identifier guaranteed to be unique among all identifiers; not all identifiers are unique," "but the specification does not disclose 'unique identifiers' as recited in [the substitute] claims." *Id.* at 25 (citing Ex. 1056 ¶ 62; Ex. 1054, 104:3–14). Acknowledging that "the specification states that the controller can assign an identifier to different sets of parameters and that an operator can later recall the parameters using the identifiers," Petitioner, nevertheless, contends that "the inventors never said that the identifiers are guaranteed to be unique—or even

how the controller uses the identifiers." *Id.* (citing Ex. 1001, 7:39–42, 8:26–28, 9:1–4, 9:15–17; Ex. 1056 ¶¶ 64–65).

Patent Owner contends that "[t]he priority applications provide support for the 'assign' limitations with respect to both the 'first unique identifier' and the 'second unique identifier.'" PO MTA 9 (citing Ex. 2007 ¶ 168). According to Patent Owner, "[t]he priority applications disclose that 'the controller 66 may be configured to assign a *different* identifier to each saved set of parameters in order to simplify the recall of the data.'" *Id.* at 25–26 (citing Ex. 1005 ¶ 28; Ex. 2004, ¶ 28) (emphasis added).

In its Sur-reply, Petitioner reiterates its argument that "the '871 patent has no §112 support for guaranteeing that the identifiers are unique." Pet. Sur-reply to Opp. to MTA 1. During oral argument, Patent Owner argued that "the use of the word unique in the claims is just the way to refer to things that are different when you're only hinting to something in the singular. So the meaning is no different for unique identifier in the amended claims from the specification use of identifier." Tr. 32, ll. 4–8.

We find Patent Owner's assertion that in this case "unique" simply means "different" credible. Although, the term "unique identifier" may be considered to be a specific type of identifier in some contexts, Petitioner has not shown that to be the case in the context of the claims at issue in this proceeding. As noted by Petitioner, the Specification of the '871 patent does not use the claim term "unique identifier," but does use the term "different identifier." Pet. Opp. to MTA 25. Thus, it appears that Patent Owner is simply using the terms "unique" and "different" interchangeably. Accordingly, we find that the Specification of the '871 patent provides written description support for the claim term "unique identifier."

Turning to the issue of written description support for the rest of the amendments (i.e., the uncontested limitations), we note that Patent Owner identifies the paragraphs in the Specification of the '871 patent that provide support for the features added to the substitute claims. PO MTA 3–16. Having considered Petitioner's contentions, Patent Owner's assertions and evidence, and the full record developed during trial, we determine that Patent Owner has, by a preponderance of evidence, demonstrated that the proposed substitute claims do not enlarge the scope of the claims of the challenged patent or introduce new subject matter.

Finally, the Motion to Amend includes a claim listing, as required by 37 C.F.R. § 42.121(b). *Lectrosonics*, Paper 15 at 8; PO MTA App. A.

In view of the above, we determine that the Motion To Amend meets the statutory and regulatory requirements of 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121. We turn now to whether Petitioner has met the burden of persuasion with respect to patentability.

B. Patentability of Substitute Claims 21–24, 26, 27, and 30–33

1. Eligibility of Substitute Claims 21–24, 26, 27, and 30–33 under 35 U.S.C. § 101

As we determine that proposed substitute claims 21–24, 26, 27, and 30–33 are unpatentable as obvious for the reasons discussed below, we need not determine if these claims are also patent eligible.

2. Obviousness of Substitute Claims 21–24, 26, 27, and 30–33 in view of the Combined teachings of Grembowicz, Panoushek, Buschmann, and Sever

a. Patent Owner's Motion To Amend

Patent Owner asserts that "the new proposed claims are not obvious

over the IPR prior art cited by Petitioners in their proposed grounds of rejection." PO MTA (citing *Becton, Dickinson and Co. v. B. Braun Melsungen AG*, IPR2017-01587, Paper 93 at 64–65 (PTAN Dec. 12, 2018) (Final Written Decision and Order on Motion to Amend); Paper 23 at 17–21 (PTAB Mar. 20, 2018) (Patent Owner's Contingent Motion to Amend)). Specifically, Patent Owner submits the following three contentions. First, Patent Owner contends that:

> None of the cited prior art references disclose "assign[ing] a first unique identifier to a first set of parameters comprising the first set of configuration parameters and the first set of operation parameters" and "assign[ing] a second unique identifier to a second set of parameters comprising the second set of configuration parameters and the second set of operation parameters," as required by claim 21.

PO MTA 19 (citing Ex. 2007 ¶ 193). According to Patent Owner, "[n]either Panoushek nor Buschmann discloses assigning a unique identifier to any saved parameters," because "[t]here is no description in either reference that discusses the assignment of a unique identifier or describes to a POSITA how to use a unique identifier." *Id.* at 20 (citing Ex. 2007 ¶ 195).

Second, Patent Owner contends that:

> None of the cited prior art references disclose "recall[ing], *using the first or second unique identifier*, either one of the first set or second set of the configuration parameters and the corresponding respective first set or second set of the operation parameters from memory in response to the recall command in association with a third paving operation, *wherein the recall command includes the respective first or second unique identifier*," as required by claim 21.

PO MTA 20 (citing Ex. 2007 ¶ 196). According to Patent Owner, claim 21 "include[s] additional recitations to further clarify that both sets of parameters must be available for selection at the same time. *Id.* (citing Ex.

2007 ¶ 197). Patent Owner asserts that "[t]he additional recitations are consistent with the specification's description that '[i]f multiple sets of parameters are stored in memory, the operator can recall the desired set of parameters using the respective identifier'" and that "[t]hese respective identifiers allow the operator to distinguish between the multiple saved parameters that may be selected at a given time depending on the desired operations to be performed. *Id.* at 21 (citing Ex. 1001, 17:38–42, 8:26–29, 9:1–4, 12–16). With this understanding in mind, Patent Owner contends that "[n]either Panoushek nor Buschmann allow the operator to distinguish between multiple saved parameter sets using a unique identifier to select a given parameter set at a later time depending on the desired operations to be performed." *Id.* at 22 (citing Ex. 2007 ¶ 189).

Third, Patent Owner contends that:

> None of the cited prior art references discloses "sav[ing] in memory response to the first save command (1) a first set of the configuration parameters . . . , the first set of configuration parameters being *determined by the operator to be applicable for a set-up of the screed assembly prior to a later paving operation*, *and* (2) a first set of operation parameters indicative of an operating state of an electronically controlled system of the paving machine *that requires adjustment during the first paving operation to enable the spreading and compacting of the paving material by the screed assembly*" and the corresponding features of the second "save" limitation, as required by claim 21.

PO MTA 23–24 (citing Ex. 2007 ¶ 201). According to Patent Owner,

> Buschmann does not disclose saving both "a first set of operation parameters" and "a second set of operation parameters" that are both "indicative of an operating state of an electronically controlled system of the paving machine that requires adjustment during the [respective first and second paving operations] to enable the spreading and compacting of the paving material by

> the screed assembly." At best, Buschmann only discloses saving a single set of drive positions that relate to paving operations.

Id. at 24–25 (citing Ex. 2007 ¶ 203).

b. Peitioner's Opposition to Motion To Amend

Petitioner responds to each of Patent Owner's contentions. Pet. Opp. to MTA 1–14. Responding to Patent Owner's first contention that none of the prior art references disclose assigning first and second unique identifiers, Petitioner asserts that "Grembowicz in view of Panoushek, Buschmann, and Sever teaches a controller configured to assign '*a first unique identifier to a first set of parameters*' and '*a second unique identifier to a second set of parameters*.'" *Id.* at 5 (citing Ex. 1056 ¶¶ 29–38). In support of this contention, Petitioner explains that "Panoushek's controller assigns WORK SET 1 to identify values saved for set 1 and WORK SET 2 to identify the values saved for set 2." *Id.* (citing Panoushek, 9:31–46, Fig. 4; Ex. 1054, 97:20–22). According to Petitioner, "WORK SET 1 is a '*first unique identifier to a first set of parameters'* and WORK SET 2 is a '*second unique identifier to a second set of parameters.'*" *Id.* (citing Ex. 1056 ¶¶ 33–34).

Petitioner explains further that "[a] POSITA would have understood that the controller assigns other identifiers to set 1 and set 2 in the form of memory addresses or pointers. Pet. Opp. to MTA 5 (citing Ex. 1056 ¶¶ 35–37). In addition, Petitioner explains that "[a]s Dr. Sorensen explained during deposition, the values associated with WORK SET 1 and WORK SET 2 would be stored at a memory address. (SorensenDepo., 97:18–22). These addresses are different identifiers because the controller assigns different addresses to identify the storage location of the values for WORK SET 1 and WORK SET 2." *Id.*

Turning to Patent Owner's second contention that none of the prior art references disclose recalling using the first and second unique identifiers, Petitioner asserts that the proposed combination "teaches a controller configured to "*recall . . . one of the first set or second set of the configuration parameters . . . from memory in response to the recall command in association with a third paving operation*" as these elements are identical to the elements in claim 1. Pet. Opp. to MTA 6–7 (citing Pet. 39–40). According to Petitioner,

> The combination teaches "*recall . . . the corresponding respective first set or second set of the operation parameters*" because a POSITA would have been motivated to recall not only configuration parameters but also operation parameters to: (1) reduce the number of required operator interaction; (2) prevent operator errors; (3) improve laying quality; (4) improve operational safety; (5) reduce labor costs; (6) reduce fuel consumption; and (7) provide a uniform work result.

Id. at 7 (citing Ex. 1003 ¶¶ 122–131, 164–165; Pet. 62–63). Petitioner asserts further that "[t]he combination also teaches '*using the first or second unique identifier*' and '*wherein the recall command includes the respective first or second unique identifier'* because . . . , Panoushek uses the unique identifiers WORK SET 1 and WORK SET 2 (and corresponding pointers / memory addresses) during recall." *Id.* (citing Ex. 1003 ¶ 40).

Regarding Patent Owner's third contention that none of the prior art references disclose the saving in memory recitations, Petitioner replies that:

> Grembowicz in view of Panoushek, Buschmann, and Sever teaches a controller configured to save "*a first [/second] set of operation parameters indicative of an operating state of an electronically controlled system of the paving machine that requires adjustment during the first [/second] paving operation to enable the spreading and compacting of the paving material by the screed assembly*" because a POSITA would have been

> motivated to save/recall operation parameters for various drives (i.e., operating states of an electronically controlled system) of the tamper, leveling cylinder, screed, and spreading screw.

Pet. Opp. to MTA 4 (citing Buschmann ¶¶ 4, 19, 33; Ex. 1056 ¶ 28; Pet. 58–63).

c. Patent Owner's Reply in Support of Motion To Amend

With respect to Petitioner's arguments in answer to Patent Owner's first contention that none of the prior art disclose unique identifiers as claimed, Patent Owner does not directly challenge Petitioner's argument that both Panoushek and Sever disclose unique identifiers. Instead, Patent Owner asserts that "none of [Petitioner's] alleged identifiers are included in a recall command, as required by independent claims 21 and 31, or recall a 'desired' set of saved parameters, as required by independent claim 27." PO Reply in Support of MTA 2. We consider this argument to be applicable to Patent Owner's second contention discussed below.

Regarding its second contention that none of the prior art references disclose recall using the unique identifiers, Patent Owner asserts that "whether Panoushek uses any of these identifiers during recall has nothing to do with whether the recall command includes such identifiers. The alleged recall command does not." PO Reply in Support of MTA 2 (citing Ex. 2010 ¶¶ 50–67). Patent Owner asserts further that "[t]he closest Petitioner or its expert come is implying that an operator could input unique identifiers from Sever for recall via second operator input 52," "[b]ut an operator can only input different types of signals or commands via third operator input 54, Panoushek at 5:16-22, which Petitioner and its expert say is for save commands, not recall commands." *Id.* at 3 (citing Pet. 31; Ex. 1003 ¶ 102). According to Patent Owner, "Panoushek teaches only 'successive input

signals or commands' for second operator input 52, which Petitioner points to for the recall command, not different types of signals or commands." *Id.* (citing Panoushek, 5:11–15). "Although Petitioner cites its expert for the proposition that the instruction could be 'recall stored parameter set 1,' Paper 23 at 9, its expert correctly says only that the instruction could be 'recall stored parameters.'" *Id.* at 5–6 (citing Ex. 1055 ¶ 16). Thus, Patent Owner contends that "[Petitioner's expert] cannot agree with Petitioner because his position is that an operator's choice of WORK SET 1 or WORK SET 2 is enabled not by different types of input signals or commands, but by 'the number of times the operator successively actuates the resume switch 52.'" *Id.* at 4 (citing Ex. 1055 ¶ 31).

Turing to its third contention that none of the prior art references disclose the save recitations, Patent Owner contends that although "Petitioner alleges the prior art 'teaches a controller configured to save '*a first [/second] set of operation parameters indicative of an operating state of an electronically controlled system of the paving machine that requires adjustment during the first [/second] paving operation*,'" Petitioner does not "allege these saves are 'in response to' the first and second save commands, as required by independent claims 21 and 27. PO Reply in Support of MTA 5. Patent Owner asserts further that "Buschmann does not disclose the save command limitations in the original claims, IPR2018-01199, Paper 10 (Nov. 14, 2018) at 18-21, much less the substitute independent claims." *Id.* Based on this assertion, Patent Owner contends that Petitioner's proposed combination cannot teach any operation-parameter-save 'in response to' a save command, as required by the substitute claims. *Id.* at 5–6.

d. Petioner's Sur-reply to Patent Owner's Reply in Support of Motion To Amend

Regarding Patent Owner's second contention that none of the prior art references disclose recalling using the unique identifiers, Petitioner replies that "initiating a recall command that uses an identifier is precisely what the '871 patent discloses." Pet. Sur-reply to Opp. to MTA 5 (citing Ex. 1001, 8:27–28, 9:14–16). In support, Petitioner quotes the '871 patent, as stating "the operator may recall the desired set of parameters using the assigned identifier." *Id.* (quoting Ex. 1001, 8:27–28). According to Petitioner, "Panoushek, like the '871 patent, enables an operator to recall a parameter set using assigned identifiers," because Panoushek's recall command includes an identifier because the controller uses an identifier when executing the recall command . . . The identifier is therefore part of the recall command." *Id.* at 6 (citing Pet. Opp. to MTA 7).

Petitioner replies further that

> The combination with Sever also teaches this limitation. Panoushek can use "a numerical touch screen on display device 62." (*See* Panoushek, 7:34–36, 5:11–22; [Ex. 1056] ¶ 32[.])[.] When Panoushek uses a touchscreen to input save and recall commands, it would have been obvious to include an identifier in the recall command to directly move the machine to the desired parameters . . . . the signal sent between Panoushek's touchscreen would include both (1) an indication that the operator pressed the resume switch and (2) a unique identifier as taught in Sever.

Id. According to Petitioner, "Dr. Sorensen's own work as a graduate student . . . shows that using a touchscreen interface to input save and recall commands was well known and within the knowledge of a POSITA." *Id.* at 7. Responding to "Dr. Sorensen[']s alleg[ation] that '[i]t would be cumbersome, overly burdensome, and impractical for an operator of a

paving machine to use Sever's identifiers,'" Petitioner contends that "unique identifiers would not be cumbersome, burdensome or impractical." *Id.* at 8 (citing Ex. 1054 ¶ 44). Petitioner asserts that "a POSITA would have been motivated to use unique identifiers in paving machines because unique identifiers enable settings to be saved not only internally but also externally." *Id.* (citing Pet. Opp. to MTA 9) (internal citation omitted). According to Petitioner, "[s]aving the settings externally is quite beneficial because, as Rutz explains, '[i]t can furthermore be expedient in the case of a road paver if an implemented parameter set . . . is transmitted to at least one additional road paver, of the same type or at least similar, at the construction site." *Id.* at 8–9 (citing Rutz, 2:66–3:3.)

In addition, Petitioner reiterates its explanation of "how an operator successively actuates Panoushek's resume button to recall desired parameter sets." Pet. Sur-reply to Opp. to MTA 9 (citing Pet. Reply 8–16; Ex. 1056 ¶¶ 27–32). Petitioner asserts that "[i]f the operator wants to recall WORK SET 1, the operator can do so" and "if desired, the operator can recall WORK SET 2." *Id.* (citing Pet. Reply 23; Ex. 1024, 74:17–75:2). Then, Petitioner clarifies that its opposition "relies on Buschmann only to show that a paver can save 'operation parameters' with 'configuration parameters.'" *Id.* at 10 (citing Pet. Opp. to MTA 4–6).

e. Analysis

1. Proposed Substitute Claims 21–24, 26, and 31–33

Having considered Patent Owner's assertions, Petitioner's arguments, and the full record developed during trial, we determine Petitioner has shown claims 21–24, 26, and 31–33 to be unpatentable for the reasons discussed below. Our analysis focuses on proposed substitute claim 21.

Before turning to the contested limitations, we note that Petitioner maps each element of proposed substitute claims 21–24, 26, and 31–33 to corresponding disclosures in Grembowicz, Panoushek, Buschmann, or Sever and provides reasoning in support of the proposed combinations. Pet. Opp. to MTA 1–9. We further note that Patent Owner does not present separate arguments for the patentability of proposed substitute claims 22–24, 26[8] and 31–33.

Turning to Patent Owner's first contention that none of the prior art references teach assigning first and second unique identifiers, we find Patent Owner's assertions to be unconvincing. As discussed above in Part III.A, we adopted Patent Owner's definition of "unique" as simply meaning "different." Applying this definition, it is clear that Panoushek's "WORK SET 1" and "WORK SET 2" are unique identifiers. Further, we agree with Petitioner that Sever teaches the use of unique identifiers.

Considering Patent Owner's second contention that none of the prior art references teach use of the unique identifiers in the recall command, we also find Patent Owner's assertions to be unconvincing. Although we agree with Patent Owner that Panoushek's method requires successive actuation of resume switch 52, we do not see this requirement as nullifying the fact that Panoushek's method uses the unique identifiers "WORK SET 1" and "WORK SET 2" to recall the saved parameters. *See* Panoushek, Fig. 4.

Regarding Patent Owner's third contention that none of the prior art references teach the "save" recitations, we again find Patent Owner's

[8] It appears the reference to claims 21–36 and 31–36 should refer to claims 21–26 and 31–36, as Patent Owner presents separate arguments for proposed substitute claims 27–30. PO Reply in Support of MTA 4.

assertions to be unconvincing because Patent Owner's argument addresses only the Buschmann reference. *See* PO MTA 24–25; PO Reply in Support of MTA 5–6. We, however, understand Petitioner's position with respect to these limitations to be that Panoushek teaches the saving of first and second sets of parameters (including configuration parameters) that require adjustment during operation of the machine as explained, for example on pages 53–54 of the Petition. We further understand Petitioner's position to be that Buschmann discloses saving of operation parameters with configuration parameters as discussed on pages 59–62 of the Petition. We do not understand Petitioner to be relying on Buschmann's disclosure alone to meet this limitation in substitute claim 21.

Petitioner's findings with respect to the remaining limitations of proposed substitute claim 21 are not contested by Patent Owner. *See* PO Reply in Support of MTA 1–6. We have reviewed Petitioner's arguments and evidence in support of these findings. We are persuaded that Petitioner has sufficiently shown that these limitations are met by the combined teachings of Grembowicz, Panoushek, Buschmann, and Sever. Patent Owner also does not contest Petitioner's findings regarding the similar limitations in proposed substitute claim 31 and the additional limitations in proposed substitute dependent claims 24 and 33. *See id.* We have reviewed Petitioner's arguments and evidence in support of these findings. We are persuaded that Petitioner has sufficiently shown that these limtations are met by the combined teachings of Grembowicz, Panoshek, Buschmann, and Sever.

For these reasons, we determine that Petitioner has demonstrated, by a preponderance of evidence, that substitute claim 21 is obvious in view of the

combined teachings of Grembowicz, Panoushek, Buschmann, and Sever. As noted above, Patent Owner does not provide separate arguments for the patentability of proposed substitute claims 22–24, 26, and 31–33. *See* PO Reply in Support of MTA 1–9. Accordingly, based on the entire record in this proceeding, we find that Petitioner has demonstrated by a preponderance of evidence that claims 24, 31, and 33 are obvious in view of the combined teachings of Grembowicz, Panoushek, Buschmann, and Sever. For the same reasons, we find that Petitioner has demonstrated that proposed substitute claims 22 and 32 are obvious in view of the combined teachings of Grembowicz, Panoushek, Buschmann, Sever, and Emerson, proposed substitute claim 23 is obvious in view of the combined teachings of Grembowicz, Panoushek, Buschmann, Sever, and Lossow, and proposed substitute claim 26 is obvious in view of the combined teachings of Grembowicz, Panoushek, Buschmann, Sever, and Davin.

2. Proposed Substitute Claims 27 and 30

Petitioner maps elements for each limitation of claims 27 and 30 to corresponding disclosures in Grembowicz, Panoushek, Buschmann, Sever or Davin. Pet. Opp. to MTA 11, 14–15). Patent Owner asserts that "[n]either Petitioner nor its expert articulate how the alleged WORK SET or pointer / memory address identifiers are used to recall any 'desired set of saved parameters.' Indeed, neither even mentions this claim language." PO Reply in Support of MTA 4. Patent Owner argues that "it cannot be obvious to use the alleged identifiers to recall any desired set of saved parameters because the alleged recall command, the only way that an operator could express any desire at all, does not enable an operator to express desire or choose between available sets of saved parameters. *Id.* (citing Ex. 2010 ¶¶ 69–77).

In its Sur-reply, Petitioner contends that "[w]hen Panoushek uses a touchscreen to input save and recall commands, it would have been obvious to include an identifier in the recall command to directly move the machine to the desired parameters." Pet. Sur-reply to Opp. to MTA 6 (citing Ex. 1056 ¶ 32). According to Petitioner, "the signal sent between Panoushek's touchscreen would include both (1) an indication that the operator pressed the resume switch and (2) a unique identifier as taught in Sever." *Id*; *see also id.* at 9 (arguing that successive actuation of Panoushek's resume button recalls desired sets of parameters, including WORK SET 1 or WORK SET 2).

Patent Owner's argument is unconvincing because we do not understand recall of "desired" sets of parameters to require immediate or direct recall. In other words, recall of the desired sets of parameters via successive actuation of Panoushek's resume button discloses the required "recall" of a desired set of saved parameters, using the identifiers, as required by Proposed substitute claim 27. The '871 patent states that "[t]o the extent more than one set of parameters has been saved, the operator may recall the *desired* set of parameters using the assigned identifier." Ex. 1001, 8:26–28 (emphasis added). Thus, we understand that in the context of the '871 patent, the mere assignment of an identifier provides the user with the ability to recall the desired parameter. As discussed above, both Panoushek and Sever teach assigning identifiers to sets of parameters, and thus, meet this limitation of proposed claim 27.

Patent Owner contests the limitations in claim 27 that are similar to the limitations contested for proposed substitute claim 21. PO MTA 19–25, PO Reply in Support of MTA 2–6. For the reasons discussed above, Patent

Owner's arguments are unconvincing. Petitioner's findings with respect to the remaining limitations of proposed substitute claim 27 are not contested by Patent Owner. *See id*. We have reviewed Petitioner's arguments and evidence in support of these findings. We are persuaded that Petitioner has sufficiently shown that these limitations are met by the combined teachings of Grembowicz, Panoushek, Buschman, and Sever. Patent Owner does not contest the additional limitations in proposed substitute claim 30. *See* PO Reply in Support of MTA 4. We have reviewed Petitioner's arguments and evidence in support of its findings pertaining to proposed substitute claim 30. We are persuaded that Petitioner has sufficiently shown that these limitations are met by the combined limitations of Grembowicz, Panoushek, Buschmann, Sever, and Davin. Accordingly, based on the entire record in this proceeding, we find that Petitioner has demonstrated by a preponderance of evidence that claim 27 is obvious in view of the combined teachings of Grembowicz, Panoushek, Bushmann, and Sever and claim 30 is obvious over the combined teachings of Grembowicz, Panoushek, Bushmann, Sever, and Davin.

3. Summary

We find that Petitioner has demonstrated, by a preponderance of the evidence, that proposed substitute claims 21–24, 26, 27, and 30–33 are unpatentable in accordance with the following summary table.

Motion to Amend Outcome	**Claim(s)**
Original Claims Cancelled by Amendment	None
Substitute Claims Proposed in the Amendment	21–36
Substitute Claims: Motion to Amend Granted	None
Substitute Claims: Motion to Amend Denied	21–24, 26, 27, 30–33
Substitute Claims: Not Reached	25, 28, 29, 34–36

V. ORDER

After due consideration of the record before us, and for the foregoing reasons, it is:

ORDERED that claims 1–6, 8, 9, and 12–17 of the ’871 patent are held unpatentable;

FURTHER ORDERED that Patent Owner’s Motion to Amend is denied with respect to substitute claims 21–36; and

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

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