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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ELIAS M. AYANA and BRAD K. PALMER

Appeal 2018-008060
Application 13/705,509
Technology Center 2100

Before JENNIFER S. BISK, LARRY J. HUME, and
JULIET MITCHELL DIRBA, *Administrative Patent Judges*.

BISK, *Administrative Patent Judge*.

DECISION ON APPEAL¹

Pursuant to 35 U.S.C. § 134(a), Appellant² appeals from the Examiner’s decision to reject claims 10–14 and 16–24. Claims 1–9 and 15 have been canceled. Appeal Br. 16–17 (Claims App.). We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

¹ Throughout this Decision we have considered the Specification filed December 5, 2012 (“Spec.”), the Final Rejection mailed July 19, 2017 (“Final Act.”), the Appeal Brief filed February 20, 2018 (“Appeal Br.”), the Examiner’s Answer mailed June 15, 2018 (“Ans.”), and the Reply Brief filed August 7, 2018 (“Reply Br.”).

² We use the word “Appellant” to refer to “Applicant” as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as Cummins Power Generation, Inc. Appeal Br. 2.

BACKGROUND

Appellant's disclosed embodiments and claimed invention relate to generator power systems with hybrid rectifiers that can be operated in passive or active rectifier mode. Spec. ¶¶ 1, 35. This allows passive rectification during high load conditions and active rectification at other times to optimize efficiency of the system. *Id.* at ¶ 37. Claim 10, reproduced below, is illustrative of the subject matter on appeal:

10. A system comprising:
 - a controllable alternating current power source including an engine and a generator configurable to provide a controlled output;
 - a hybrid rectifier configured to rectify the controlled output of the controllable alternating current power source and configurable to operate in an active rectification mode and a passive rectification mode; and
 - a controller configured to adjust a speed of the engine and to switch an operation of the hybrid rectifier between the active rectification mode and the passive rectification mode in response to a threshold associated with an operation speed of the engine and an efficiency maxima curve for the engine.

Appeal Br. 16–17 (Claims App.).

REJECTIONS

Claims 10, 11, 14, 16–20, and 22–24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Datta (US 2005/02862789 A1, Dec. 29, 2005), Peterson (US 2011/0215641 A1, Sept. 8, 2011), and Dengler (*Potential of Reduced Fuel Consumption of*

Diesel-Electric APUs at Variable Speed in Mobile Applications,” SAE INTERNATIONAL (2011-24-0075, Sept. 11, 2011)). Final Act. 8–22.

Claims 12 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Datta, Peterson, Dengler, and Wejrzanowski (US 2010/0105259 A1, Apr. 29, 2010). Final Act. 22–24.

Claims 21, 23, and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Datta, Peterson, Dengler, and Alston (US 2009/0261599 A1, Oct. 22, 2009). Final Act. 25–28.

ANALYSIS

We review the appealed rejections for error based upon the issues identified by Appellants, and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential). To the extent Appellants have not advanced separate, substantive arguments for particular claims, or other issues, such arguments are waived. 37 C.F.R. § 41.37(c)(1)(iv).

We have considered all of Appellants’ arguments and any evidence presented. We highlight and address specific findings and arguments for emphasis in our analysis below.

Rejection of Claims 10, 11, 14, 16–20, and 22–24 under 35 U.S.C. § 103

The Examiner finds that claims 10, 11, 14, 16–20, and 22–24 would have been obvious over the combination of Datta, Peterson, and Dengler. Final Act. 8–22. Specifically, the Examiner relies on Datta as teaching or suggesting the majority of the limitations of claim 10, but relies on Peterson as teaching a controller configured to adjust a speed of the engine (*id.* at 10–12), and on Dengler as teaching controlling the engine in response to a

threshold associated with an efficiency maxima curve for the engine (*id.* at 12–13). *Id.* at 8–13.

Appellant makes several arguments that are not persuasive because they attack references individually where the rejections are based on combinations of references. *See In re Keller*, 642 F.2d 413, 426 (CCPA 1981); *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). Specifically, Appellant argues that “Datta fails to describe, teach or suggest a controller configured to *adjust a speed of the engine and to switch an operation of the hybrid rectifier between the active rectification mode and the passive rectification mode in response to a threshold associated with an operation speed of the engine and an efficiency maxima curve for the engine*” (the “mode switch limitation”) (emphases added). Appeal Br. 6. Appellant adds that Peterson fails to teach that the switch between rectification modes is made “in response to a threshold associated with an operation speed of the engine *and* an efficiency maxima curve for the engine.” *Id.* at 7. These arguments are not persuasive because, as described above, the Examiner relies on Peterson for teaching adjusting a speed of the engine and on Dengler for the rest of limitation. These arguments, therefore, do not address the rejection as articulated by the Examiner.

Appellant also argues that the mode switch limitation requires “switching between an active rectification mode and passive rectification mode based on engine speed and the efficiency maxima curve for the engine.” *Id.* at 8 (citing Spec. ¶¶ 31–32, 38). According to Appellant, the combination of Datta, Peterson, and Dengler “[a]t most . . . teaches adjusting a speed of the engine in response to an efficiency maxima curve and switching between active and passive rectification in response to a generator

speed, but not any switching between the active and passive rectification modes in response to both an efficiency maxima curve for the engine and the speed of the engine.” *Id.* at 8–9. Appellant adds that “[t]he Examiner appears to rely on ingenuity or common sense to supply the missing teaching from the cited references.” *Id.* at 9 (citing Final Act. 7).

We agree with the Examiner that Appellant misinterprets the mode switch limitation. *See* Ans. 6. The language of this limitation does not require switching *based on engine speed of the engine and the efficiency maxima curve for the engine*, but instead requires switching “in response to a threshold,” and that threshold is “*associated with an operation speed of the engine and an efficiency maxima curve for the engine.*” Appeal Br. 16–17 (Claims App.). In other words, Appellant implies that adjusting the speed of the engine and switching the mode of the rectifier is changed directly in response to the speed of the engine and the efficiency maxima curve for the engine. *See* Appeal Br. 8–9; Reply Br. 4–7. However, the claim language does not support this interpretation, instead stating that the *threshold*, on which the adjusting and switching change in response to, is *associated with “an operation speed of the engine and an efficiency maxima curve for the engine.”* Appeal Br. 17 (Claims App.).

This interpretation is consistent with the Specification, which states that “[i]n an embodiment, the threshold is an operating point of the controllable alternating current power source at which an efficiency in the passive rectification mode is substantially equivalent to an efficiency in the active rectification mode.” Spec. ¶ 36; *see also* Spec. ¶¶ 6, 27–28 (describing Fig. 3, “a chart illustrating fuel consumption of a power source in a power system”). Moreover, the Specification describes adjusting speed

and switching rectifier mode based on such a threshold, which is derived from a previously calculated efficiency power curve. *Id.* ¶ 30 (“Accordingly, if a particular demand from a load is within the output power curves associated with the range 92, the controller 22 can operate the engine at the associated minimum speed.”), ¶ 31 (“Outside of the range 92, at higher output powers, the controller 22 can be configured to operate the engine 44 at a maximum efficiency for the target output power.”).

Based on this understanding of the mode switch limitation, we agree with the Examiner that Dengler teaches a threshold associated with an efficiency maxima curve. Dengler Fig. 3 (“Determined characteristic curve of optimum fuel consumption of the system”), 4 (“This resulting curve [shown in Fig. 3] was used for the control unit which adapts the rotary speed of the diesel engine to the present load.”). We also agree that this teaching of Dengler, combined with the teachings of Datta and Peterson, teaches or suggests the mode switch limitation.

Finally, Appellant argues that “[t]here is no reason for one of ordinary skill in the art to modify Datta to switch between active and passive rectification based on both an efficiency maxima curve for the engine and the speed of the engine since such control does not achieve the operational outcomes taught by Datta.”³ Appeal Br. 9; Reply 9. According to

³ In the Reply Brief, Appellant argues, “Datta teaches away from such a modification since Datta’s switching is based on the back emf of the generator to minimize current in the active converter and to enable maximum torque per ampere operation of the generator, and to regulate the output voltage of the generator in the passive mode.” Reply Br. 4. This argument was not presented in the Appeal Brief and Appellant does not explain good cause for its inclusion for the first time in the Reply Brief. This argument, therefore, is improper. *See* 37 C.F.R. § 41.41(b)(2) (“Any

Appellant, “the principal application contemplated for the control circuitry in Datta is for wind turbines,” and “does not include any adjustment of a speed of the wind turbine.” Reply Br. 3–4.

We do not find this argument persuasive. Appellant, itself, notes that Datta “discloses other power systems are envisaged.” Reply Br. 3. Moreover, the Examiner explains “[b]oth Datta and Peterson teach that the AC controllable generator is an AC controllable synchronous generator or genset” and “it was very common in the art of generators (gensets) to chance their speed when less power is needed, thus adjust[ing] the speed to produce less power was very common.” Ans. 4 (citing Datta ¶¶ 2, 19–20; Peterson ¶ 61). In addition, the Examiner explains that a person of ordinary skill would have been motivated to combine the teachings of Peterson and Datta to “provide a dynamic system that changes the speed of the generator to provide actual or desired output power and thus save costs.” Final Act. 11 (citing Peterson ¶ 19). Appellant does not directly address, or rebut, this finding by the Examiner. We, therefore, are not persuaded by Appellant’s arguments that the Examiner’s rejection is in error with respect to the mode switch limitation.

Accordingly, we sustain the Examiner’s rejection of claim 10 as obvious over the combination of Datta, Peterson, and Dengler. Appellant

argument raised in the reply brief which was not raised in the appeal brief, or is not responsive to an argument raised in the examiner’s answer . . . will not be considered by the Board for purposes of the present appeal, unless good cause is shown.”). Even if properly raised, we are not persuaded by this argument because Appellant has not persuasively explained why a person of ordinary skill, upon reading Datta, would be led in a direction divergent from the path that was taken by the applicant given the teachings of both Peterson and Dengler. *In re Gurley*, 27 F.3d 551, 53 (Fed. Cir. 1994).

made the same arguments regarding independent 14 as for independent claim 10. Appeal Br. 11–12. We, therefore, also sustain the Examiner’s rejection of claim 14 over the combination of Datta, Peterson, and Dengler. Finally, we also sustain the rejection of claims 11, 16–20, and 22–24, which are not argued separately (*see* Appeal Br. 12), as obvious over the combination of Datta, Peterson, and Dengler.

Rejection of Claims 12 and 13 under 35 U.S.C. § 103

The Examiner finds that claims 12 and 13 would have been obvious over the combination of Datta, Peterson, Dengler, and Wejrzanowski. Final Act. 22–24.

Claim 12 depends from claim 10 and recites “further comprising: a memory configured to store efficiency information for the controllable alternating current power source; wherein the controller is configured to switch the operation of the hybrid rectifier between the active rectification mode and the passive rectification mode in response to the threshold being based on the efficiency information.” Appeal Br. 17 (Claims App.). Claim 13 depends from claim 12 and recites “wherein the efficiency information includes one or more of the fuel efficiency information, minimal noise information, and maximum service endurance information for the engine.” *Id.*

The Examiner relies on Wejrzanowski as disclosing a memory to store the efficiency information. Final Act. 23. According to the Examiner, Wejrzanowski’s memory 58 “stores active damping and torque information for various engine speeds (efficiency information) and a processor retrieves appropriate active damping from the memory based on engine speeds.” *Id.* (citing Wejrzanowski ¶ 107).

Appellant argues that Wejrzanowski does not teach “efficiency information for the engine for switching the operation of the hybrid rectifier.” Appeal Br. 13; Reply Br. 10–11. We do not find this argument persuasive because the Examiner relies on Wejrzanowski solely for teaching a memory that stores information related to the efficiency of the engine and on Datta, Peterson, and Dengler for the rest of the recited limitations. Final Act. 22–23; Ans. 8–9 (“[T]he Examiner provided . . . Wejrzanowski for the whole purpose of explicitly teaching a simple and well known memory storing efficiency data and give the proper patentable weight to the term ‘memory’ for storing efficiency data/information.”). Appellant’s argument, therefore, do not address the rejection as articulated by the Examiner. Moreover, we agree that the combination of Wejrzanowski with the other references teaches the recited limitation.

Accordingly, we sustain the Examiner’s rejection of claims 12 and 13 as obvious over the combination of Datta, Peterson, Dengler, and Wejrzanowski.

Rejection of Claims 21, 23, and 24 under 35 U.S.C. § 103

The Examiner finds that claims 21, 23, and 24 would have been obvious over the combination of Datta, Peterson, Dengler, and Alston. Final Act. 24–28. For these claims, Appellant relies on the same arguments made for independent claims 10 and 14. *See* Appeal Br. 14. Accordingly, we sustain the Examiner’s rejection of claims 21, 23, and 24 as obvious over the combination of Datta, Peterson, Dengler, and Alston.

CONCLUSION

We affirm the Examiner's rejection of claims 10–14 and 16–24 under 35 U.S.C. § 103.

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	References/Basis	Affirmed	Reversed
10, 11, 14, 16–20, 22–24	103	Datta, Peterson, Dengler	10, 11, 14, 16–20, 22–24	
12, 13	103	Datta, Peterson, Dengler, Wejrzanowski	12, 13	
21, 23, 24	103	Datta, Peterson, Dengler, Alston	21, 23, 24	
Overall Outcome			10–14, 16–24	

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv). *See* 37 C.F.R. § 41.50(f).

AFFIRMED