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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte GERHARD HOFER and DETLEF VON REUSNER

Appeal 2018-005116
Application 14/722,747
Technology Center 2800

Before JOSEPH L. DIXON, STEVEN M. AMUNDSON, and
MICHAEL T. CYGAN, *Administrative Patent Judges*.

AMUNDSON, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant¹ seeks our review under 35 U.S.C. § 134(a) from a final rejection of claims 1–3 and 6–14. The Examiner has withdrawn the rejection of claims 4 and 5. Ans. 2.² We have jurisdiction under 35 U.S.C.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42 (2017). Appellant identifies the real party in interest as Bayerische Motoren Werke Aktiengesellschaft. Appeal Br. 1.

² This decision uses the following abbreviations: “Spec.” for the Specification, filed May 27, 2015; “Final Act.” for the Final Office Action, mailed April 21, 2017; “Appeal Br.” for the Appeal Brief, filed November 21, 2017; “Ans.” for the Examiner’s Answer, mailed February 21, 2018; and “Reply Br.” for the Reply Brief, filed April 19, 2018.

§ 6(b). On January 23, 2020, Appellant’s counsel presented arguments at an oral hearing.

We reverse.

STATEMENT OF THE CASE

The Invention

According to the Specification, the “invention relates to the charging of an electrical energy storage device of an electric vehicle at a power socket serving as a power supply.” Spec. ¶ 2. The Specification explains that a power socket may form part of an electric circuit protected by “an overcurrent protection device (for example, a 16A circuit breaker).” *Id.* ¶ 9. The Specification also explains that adding an electrical load “to the same electric circuit along with the vehicle” may trip the overcurrent protection device and “interrupt[] the electric circuit such that the power supply fails,” thus stopping charging. *Id.* ¶ 10. If someone manually overrides the overcurrent protection device, e.g., by resetting a circuit breaker, “the vehicle will automatically attempt to” resume charging “using the same charging current as before.” *Id.* ¶ 11. As a result, “the overcurrent protection device will again interrupt the electric circuit.” *Id.* Repeated tripping of the overcurrent protection device “can lead to damage to electric installations over time.” *Id.*

Hence, the invention endeavors to eliminate repeated tripping of an overcurrent protection device by automatically reducing the charging current “following the failure of the power supply” compared to “the charging current prior to the failure of the power supply.” *See* Spec. ¶¶ 12–16. Thus, “[i]f the charging procedure is restarted following the restoration of the

power supply, the vehicle charges with a reduced charging current.” *Id.*
¶ 17.

Exemplary Claims

Independent claims 1 and 12 exemplify the claims at issue and read as follows:

1. A method for charging an electrical energy storage device of an electric vehicle at a power socket which serves as a power supply, the method comprising the act of:

following a failure of the power supply and a subsequent restoration of the power supply, using a charging current, which is automatically reduced compared to the charging current before the failure of the power supply, to charge the electrical energy storage device.

12. An electric vehicle, comprising:

an electrical energy storage device which is chargeable at a power socket which serves as a power supply, wherein

the vehicle has a variable charging current limit for the purpose of limiting a maximum charging current, and

the vehicle is configured to automatically reduce the charging current limit following failure of the power supply.

Appeal Br. 17, 19 (Claims App.).

The Prior Art Supporting the Rejection on Appeal

As evidence of unpatentability, the Examiner relies on the following prior art:

Kaino	US 2011/0204850 A1	Aug. 25, 2011
Yasko	US 2012/0265362 A1	Oct. 18, 2012

The Rejection on Appeal

Claims 1–3 and 6–14 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Yasko and Kaino. Final Act. 2–13; Ans. 2–3.

ANALYSIS

We have reviewed the rejection of claims 1–3 and 6–14 in light of Appellant’s arguments that the Examiner erred. Based on the record before us and for the reasons explained below, we agree with Appellant’s assertions that the Examiner failed to articulate an adequate reason to combine the elements in Yasko and Kaino as required by the claims. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). A § 103(a) rejection should rest on “some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006).

Here, the Examiner determines that “[i]t would have been obvious to a person having ordinary skill in the art to reduce the charging current to maintain an allowable charging current as explicitly taught by Kaino in the vehicle charging system of Yasko” because “Yasko uses a non-volatile memory to use a charging characteristic” that “was determined prior to a loss of power in order to prevent another loss of power upon power being restored.” Final Act. 3, 11–13. The Examiner finds that Yasko explicitly teaches time as “a charging characteristic” that “was determined prior to a loss of power in order to prevent another loss of power.” *Id.* at 3, 11–13; *see* Ans. 8–9. The Examiner also finds that Yasko implicitly teaches current as “a charging characteristic” that “was determined prior to a loss of power in order to prevent another loss of power.” Final Act. 3, 11–13; *see* Ans. 8–9.

Appellant argues that the Examiner erred in rejecting independent claims 1 and 14 “because the asserted combination of references is not supported by any reason to combine that is based on rational underpinnings.” Appeal Br. 12. Further, Appellant asserts that the Examiner “never explains *why* or *how* a person of skill in the art would have arrived at the specific step of ‘*automatically* reducing’ the charging current to be used following a failure of the power supply and a subsequent restoration thereof.” *Id.* at 12–13.

In addition, Appellant contends that “neither Yasko nor Kaino are directed toward the problem solved by Appellant’s invention, nor do they solve such a problem.” Appeal Br. 7. According to Appellant, Yasko addresses the problem of inrush surge current resulting when multiple charging devices supplied with power through a common distribution component simultaneously lose power and then simultaneously resume charging after power restoration. Appeal Br. 8–9. Appellant asserts that Yasko addresses that problem by providing different predetermined time delays for the different charging devices to resume charging. *Id.* at 9–10 (citing Yasko ¶¶ 5–7, 29–30, Fig. 3). Appellant also asserts that “Yasko never discusses or suggests any automatic reduction of the used charging current to the vehicle following the failure and subsequent restoration of power.” *Id.* at 11.

Further, according to Appellant, Kaino addresses the problem of excessive voltage when charging several serially connected batteries by “monitor[ing] the battery voltage so as not to exceed the available maximum voltage of any of the batteries.” Appeal Br. 12 (citing Kaino ¶¶ 5, 8–9).

As discussed above, the Examiner determines that “[i]t would have been obvious to a person having ordinary skill in the art to reduce the charging current to maintain an allowable charging current as explicitly taught by Kaino in the vehicle charging system of Yasko.” Final Act. 3, 11–13. But the Kaino portions the Examiner cites do not teach “reduc[ing] the charging current to maintain an allowable charging current.” *See* Kaino ¶¶ 72, 75.

Instead, Kaino teaches reducing the charging current to avoid “exceed[ing] the available maximum voltage of the battery.” *See, e.g.*, Kaino ¶¶ 8–9, 68–79, Fig. 3. For instance, Kaino’s Figure 3 shows an automatic current reduction when the battery-block voltage B_h exceeds either (1) a “protection voltage” of 4.32 V for two consecutive measurements or (2) a “setting voltage” of 4.30 V for three consecutive measurements. *Id.* ¶¶ 72, 74, 78–79, Fig. 3; *see id.* ¶ 69.

As also discussed above, the Examiner determines that Yasko implicitly teaches current as “a charging characteristic” that “was determined prior to a loss of power in order to prevent another loss of power.” Final Act. 3, 11–13. But the Yasko portions the Examiner cites do not teach determining the charging current “prior to a loss of power in order to prevent another loss of power.” *See* Yasko ¶¶ 12–13, 27–29, Fig. 1.

Instead, Yasko teaches that after power restoration to a charging device “the delivery of current to [a] power storage device” is controllably commenced or resumed in three steps. *See* Yasko ¶¶ 27–30, 37, 39. First, the charging device executes an initialization process, i.e., a “reboot” of the charging device, to reset or initialize values that permit the device to commence or resume power delivery. *Id.* ¶¶ 27–28, 39. Second, “after the

initialization process has completed,” the charging device “determines a start time in which to commence or resume delivery of power to [the] power storage device.” *Id.* ¶¶ 28–29, 37. Third, after determining the start time, a controller waits for time to elapse “before operating [the] power delivery system,” e.g., “by closing the contactor,” to “provide current to [the] power storage device.” *Id.* ¶¶ 28–29. The Examiner cites nothing in Yasko to support the finding that the phrase “controllably commenced” in Yasko implicitly teaches current as “a charging characteristic” to reduce after losing power. Final Act. 3; Ans. 8–9.

In summary, the Examiner’s reason to combine the elements in Yasko and Kaino as required by the claims rests on two erroneous determinations. First, in the cited portions, Kaino does not teach “reduc[ing] the charging current to maintain an allowable charging current,” but rather reducing the charging current to avoid exceeding a maximum voltage. *See Kaino* ¶¶ 72, 75. Second, in the cited portions, Yasko does not teach determining the charging current “prior to a loss of power in order to prevent another loss of power,” but rather implementing time delays after losing power to avoid damaging power-distribution equipment. *See Yasko* ¶¶ 4, 12–13, 27–29, Fig. 1.

Further, we agree with Appellant that the Examiner has not adequately explained why an ordinarily skilled artisan would have combined Kaino’s teaching of a voltage-focused battery-charging scheme with Yasko’s teaching of a distribution-focused power-restoration scheme. Appeal Br. 7–13. To the extent that the Examiner relies on the phrase “controllably commenced” in Yasko as a reason to reduce the charging current after losing power, the Examiner identifies nothing in Yasko linking

that phrase to the charging current. Hence, we do not sustain the § 103(a) rejection of claims 1 and 14.

The Examiner articulates the same reason to combine the elements in Yasko and Kaino for independent claims 12 and 13 as for claims 1 and 14. Final Act. 11–12. For the reasons discussed above for claims 1 and 14, we do not sustain the § 103(a) rejection of claims 12 and 13. For the same reasons, we do not sustain the § 103(a) rejection of dependent claims 2, 3, and 6–11.³

Because this determination resolves the appeal for claims 1–3 and 6–14, we need not address Appellant’s other arguments regarding Examiner error. *See, e.g., Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984) (explaining that an administrative agency may render a decision based on “a single dispositive issue”).

CONCLUSION

We reverse the rejection of claims 1–3 and 6–14 under 35 U.S.C. § 103(a).

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–3, 6–14	103(a)	Yasko, Kaino		1–3, 6–14

REVERSED

³ In the event of continued prosecution, the Examiner should consider the propriety of a rejection under 35 U.S.C. § 112 ¶ 2 for claims 6, 8, and 9 based on a lack of antecedent basis for (1) the phrase “the power supply device” in claim 6 and (2) the phrase “the motor vehicle” in claims 8 and 9.