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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BERND RAPP and SASCHA JOOS

Appeal 2014-007496
Application 12/938,716
Technology Center 3700

Before STEFAN STAICOVICI, MICHAEL L. WOODS, and
LEE L. STEPINA, *Administrative Patent Judges*.

WOODS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Bernd Rapp and Sascha Joos (“Appellants”) seek our review under 35 U.S.C. § 134(a) of the final rejection of claims 1 and 3–12. Appeal Br. 1. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

CLAIMED SUBJECT MATTER

Appellants' invention relates to a method for regulating or controlling the temperature of a glow plug, which may be used as a starting aid for combustion in a diesel engine. Spec. p. 1, ll. 7–16, p. 7, ll. 1–8. Claim 1 is the sole independent claim and is reproduced below with italicized emphases added to highlight a particular limitation addressed in this decision.

1. A method for regulating or controlling a temperature of a sheathed-element glow plug in a glow process of the sheathed-element glow plug, comprising:
determining a resistance using a physical model;
determining a temperature value during a transient thermal response within the sheathed glow plug as a function of the resistance of the sheathed-element glow plug; and
regulating a temperature of the sheathed glow plug as a function of the temperature value;
wherein the resistance of the sheathed-element glow plug includes a measured resistance and a calculated resistance, and
the transient thermal response takes place between a preheating phase and a temperature equalization phase of the glow process.

Claims App. 1.

THE REJECTIONS

I. Claims 1 and 3 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Toedter (US 7,234,430 B2, issued June 26, 2007), Uhl (US 6,712,032 B2, issued Mar. 30, 2004), and Kernwein (US 2009/0316328 A1, published Dec. 24, 2009). Final Act. 3.

II. Claim 4 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Toedter, Uhl, Kernwein, and Abe (US 4,283,619, issued Aug. 11, 1981). Final Act. 3.

III. Claim 5 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Toedter, Uhl, Kernwein, Abe, and Kernwein '090 (US 8,082,090 B2, issued Dec. 20, 2011). Final Act. 4.

IV. Claims 6–9 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Toedter, Uhl, Kernwein, Abe, and Casasso (US 7,950,378 B2, issued May 31, 2011). Final Act. 4.

V. Claims 10 and 12 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Toedter, Uhl, Kernwein, and Toedter '864 (US 7,730,864 B2, issued June 8, 2010). Final Act. 4–5.

VI. Claim 11 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Toedter, Uhl, Kernwein, Toedter '864, and Kernwein '885 (US 7,957,885 B2, issued June 7, 2011). Final Act. 5.

ANALYSIS

Rejection I: Claims 1 and 3 as Unpatentable Over Toedter, Uhl, and Kernwein

In rejecting the sole independent claim, claim 1, the Examiner relies on Toedter for disclosing the following:

- (a) Determining a resistance using a physical model;
- (b) Determining a temperature value within a sheathed glow plug as a function of resistance of the glow plug; and
- (c) Regulating a temperature of the glow plug as a function of temperature, where the temperature is determined as a function of measured resistance and calculated resistance.

Final Act. 3 (citations omitted). The Examiner acknowledges, however, that Toedter does not disclose using its method during the claimed transient thermal response. *Id.*

To satisfy this limitation, the Examiner relies on Kernwein’s teaching of “controlling glow plug temperature in part by using resistance” and Uhl’s teaching of “the relevance of utilizing the difference of measurements made at the initial moment and at completion of the heating phase.” *Id.* (citations omitted). Based on these teachings and disclosures, the Examiner reasons that it would have been obvious “to use the method of controlling glow plug temperatures of Toedter ’430 utilizing preheating temperature values as suggested by Uhl in the heating phase glow process taught by Kernwein ’328.” *Id.*

In contesting the rejection, Appellants argue that the Examiner has provided “no reason to combine the cited references.” Appeal Br. 3. Appellants further point out that the claims recite “determining a temperature value during a transient thermal response[, which] takes place between a preheating phase and a temperature equalization phase,” and that “Toedter only contemplates measurement of resistance (via a current) during sufficiently stationary phases.” *See id.* (citing, in relevant part, Toedter, col. 3, ll. 18–20); Claims App. 1.

Notably, the cited portion of Toedter discloses that

The evaluation of the resistance of the glow plug 3 by *measurement of the current is certainly insufficient to measure the temperature, especially in dynamic phases, but in sufficiently stationary phases the resistance of the glow plug 3 can be compared with the values of the physical model 4 and the accuracy can thereby be increased or the plausibility checked.*

Toedter ’430, col. 3, ll. 17–23 (emphasis added).

In response to Appellants’ assertion that no reason was provided, the Examiner explains that the reason for combining the references was “to accurately measure the temperature throughout the heating process.” Ans. 5.

In response to Appellants' argument that the combination fails to satisfy the claimed "transient thermal response," the Examiner explains that the Appellants "fail[] to link [Toedter's] idea of 'dynamic phases' to the claim language [and that t]he phrase 'dynamic phases' does not appear in any claim." *Id.* at 6.

Notwithstanding the Examiner's explanation, we find Appellants' arguments persuasive.

First, and *even if* we credit the Examiner's response that the stated reasoning was to "accurately measure the temperature throughout the heating process," we agree with Appellants that inadequate reasoning for combining the prior art was provided. Appeal Br. 3. The Court in *KSR* noted that the analysis supporting a rejection under 35 U.S.C. § 103 should be made explicit. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). Moreover, there "must be 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), cited with approval in *KSR*, 550 U.S. at 418. In the present case, the rejection fails to explicitly articulate a reason for combining Toedter, Uhl, and Kernwein. Final Act. 3 (stating simply that "[i]t would have been obvious . . . to use the method of controlling glow plug temperature of Toedter' 430 utilizing preheating temperatures values as suggested by Uhl in the heating phase glow process taught by Kernwein '328.") In particular, the Examiner fails to explain how combining the cited art would improve the accuracy—as suggested in the Answer—of Toedter's method for determining and regulating the temperature of a glow plug. *See id.*; Ans. 5.

Second, we also find persuasive Appellants’ argument that the proposed combination fails to adequately address the claim requirement that the temperature value is determined “during a transient thermal response,” which “takes place between a preheating phase and a temperature equalization phase.” Appeal Br. 2–3; Claims App. 1. The Examiner acknowledges that Toedter “does not disclose using [its] method during a transient thermal response,” but fails to explain exactly how Toedter’s method of controlling glow plug temperature is being modified to determine the temperature during the claimed period. Final Act. 3. Furthermore, Toedter discloses that the evaluation of the resistance of the glow plug is “certainly insufficient” in “dynamic phases,” and instead contemplates measurement during “stationary phases.” Appeal Br. 3 (citing Toedter col. 3, ll. 18–20). We credit Appellants’ assertion that the phrases “dynamic phases” and “transient thermal response”—as recited in the claims—would be “recognized as comparable by one of ordinary skill in the art,” and we fail to see how the Examiner’s proposed modification of Toedter overcomes Toedter’s apparent inability to measure resistance or temperature during the claimed “transient thermal response.”

For the foregoing reasons, we do not sustain the rejection of claims 1 and 3 as unpatentable over Toedter, Uhl, and Kernwein.

*Rejection II–VI: Claims 4–12 as unpatentable over
Toedter, Uhl, Kernwein, and other cited art*

Rejections II–VI rely on the same unsupportable determinations relied on by the Examiner in rejecting independent claim 1 and dependent claim 3 under Rejection I. *See* Final Act. 3–5. Accordingly, for the same reasons

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we do not sustain Rejection I, we do not sustain the rejection of dependent claims 4–12 under Rejections II–VI.

SUMMARY

The Examiner's rejections of claims 1 and 3–12 under 35 U.S.C. § 103(a) as being unpatentable are reversed.

REVERSED