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MILLER IP GROUP, PLC GENERAL MOTORS CORPORATION 42690 WOODWARD AVENUE SUITE 200 BLOOMFIELD HILLS, MI 48304			WILLS, MONIQUE M	
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL
AND APPEAL BOARD

Ex parte JOSEPH D. RAINVILLE and JAMES S. SIEPIERSKI

Appeal 2011-010305
Application 11/669,994
Technology Center 1700

Before JEFFREY T. SMITH, MICHAEL P. COLAIANNI, and
DONNA M. PRAISS, *Administrative Patent Judges*.

PRAISS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 the final rejection of claims 1-15. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b). Oral arguments were waived in this appeal on August 15, 2012.

We AFFIRM.

Appellants' invention is said to be directed to "a fuel cell system that employs an integrated cathode inlet air compressor and anode recirculation blower" (Spec. 1).

Claim 1 is illustrative (with key limitation shown in italics):

1. A fuel cell system comprising:

a fuel cell stack including a cathode side and an anode side, said cathode side receiving an airflow and said anode side receiving an anode reactant gas flow;

an air compressor providing the airflow to the cathode side of the fuel cell stack;

an anode recirculation loop for recirculating anode exhaust gas from the stack back to the anode side of the fuel cell stack;

an anode recirculation blower that causes the anode exhaust gas to flow back to the anode side of the fuel cell stack; and

an electric motor including a motor shaft, *said motor shaft being coupled to both the air compressor and the anode recirculation blower so that the same motor drives both the air compressor and the anode recirculation blower.*

Appellants appeal the following rejections:

1. Claims 1-6, 8-9, 11 and 13-15 should be rejected under 35 U.S.C. § 103(a) as being unpatentable over Siepierski (US 6,830,842 B2 issued Dec. 14, 2004) in view of Raiser (US 2002/0064695 A1 published May 30, 2002).

2. Claims 7, 10, and 12 are rejected under 35 U.S.C. §103(a) as being unpatentable over Siepierski, Raiser and Rainville (US 2005/0084724 A1 published Apr. 21, 2005).

With regard to rejection (1), Appellants argue the subject matter common to claims 1, 9 and 14 (App. Br. 8-14). We select claim 1 as representative. Appellants argue the subject matter of dependent claims 4, 8 and 13 also (*id.* at 14-15).

Instead of separately arguing rejection (2), Appellants rely on arguments made regarding claims 1, 9 and 14 (*id.* at 16). Accordingly, the rejection of claims 7, 10, and 12 will stand or fall with our analysis of the rejection of claim 1.

ISSUE

Did the Examiner reversibly err in determining that the use of one motor to drive both an air compressor and a recirculation blower would have been obvious because it would reduce the amount of motors and the operation costs? We decide this issue in the negative.

FINDINGS OF FACT AND ANALYSES

Appellants do not dispute that Siepierski and Raiser are properly combined by the Examiner and, that the combination results in separate motors for operating an anode recirculation blower and a cathode air compressor in a fuel cell system. App. Br. 10. Appellants argue that the omission of one motor by coupling the motor shaft of a single electric motor to both objects “is an indicia of [un]obviousness [*sic*]” (*id.* at 11).

Appellants also assert that Siepierski does not teach the recirculation blower includes impellers designed and calibrated to provide the desired airflow pressure and recirculation gas flow for a common shaft speed. *Id.* at 14. Appellants further contend that the disclosure in Siepierski of compression ratios for compressors and blowers being used interchangeably does not teach or suggest the use of a compressor as a master machine and an anode recirculation blower as a slave machine. *Id.* at 15.

The Examiner responds that the use of one motor to operate both the compressor and blower would have been *prima facie* obvious because one skilled in the art would have the option of driving the blower and compressor with two separate motors or one motor. Ans. 7. The Examiner found the reasons for using one motor to drive both the blower and compressor are (1) the amount of air supplied to the cathode is maximized with the addition of a compressor (*id.* at 7-8), (2) the amount of motors needed to drive the blower and compressor would be reduced (*id.* at 8), and (3) operation costs are reduced when the amount of motors is reduced (*id.*). The Examiner further finds that the compressor would be the dominant machine because it performs more work and requires more power than a blower. *Id.* at 9.

The preponderance of the evidence favors the Examiner's obviousness conclusion. We adopt the Examiner's analysis in the Answer as our own. We add the following discussion primarily for emphasis.

The Examiner cited Raiser for the disclosure of a compressor to supply air on the cathode side of a fuel cell at elevated pressure to maximize the amount of air supplied to the cathode. Ans. 4-5; Raiser at ¶ [0037]. The compressor is a device that requires power supplied by a motor. Raiser at ¶

[0037]. A fuel cell having both the recirculation blower disclosed by Siepierski and the compressor disclosed by Raiser requires one or two motors to drive the two devices. The Examiner reasoned that one skilled in the art would have been motivated by a reduction in the number of motors and by a reduction in operation costs to choose one motor to power both the compressor and the recirculation blower. Ans. 7-8.

The innovation claimed combines three known devices, a compressor, a recirculation blower, and a motor in a fuel cell system. As claimed, the compressor, the recirculation blower, and the motor all perform their established functions. Though Appellants argue that the Examiner's statement that using a common shaft would reduce the number of motors is conclusory and based on hindsight (App. Br. 11-13), Appellants provide no argument or rationale to refute the Examiner's rationale for the modification based upon the finding that the skilled artisan would have recognized that choosing one motor over two separate motors to drive the compressor and the recirculation blower would have reduced operation costs. Legal precedent requires only such an "articulated reasoning with some rational underpinning," and not "precise teachings directed to the specific subject matter of the challenged claim" to establish obviousness. *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007); cf Reply Br. at 2 ("If it is, in fact, 'reasonable to expect the artisan to choose one motor to drive the compressor and blower,' then the Examiner should be able to cite prior art that teaches this.").

Appellants also do not address the Examiner's finding that the compressor would be the dominant machine because it performs more work and requires more power than a blower (Ans. at 9) nor do Appellants explain

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why the common shaft (148) around rotation axis (150) for the motor (114) and impellers (146) does not teach or suggest a common shaft speed (*id.* at 4).

On this record, we affirm the Examiner's § 103 rejections.

DECISION

The Examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136.

ORDER

AFFIRMED

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