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| ANDREWS KURTH KENYON LLP 1350 I STREET, N.W. SUITE 1100 WASHINGTON, DC 20005 | | | LYLES-IRVING, CARMEN V | |
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte TAKEHIRO NAOKI

Appeal 2015-002804
Application 13/126,994
Technology Center 1700

Before KAREN M. HASTINGS, N. WHITNEY WILSON, and
MONTÉ T. SQUIRE, *Administrative Patent Judges*.

SQUIRE, *Administrative Patent Judge*.

DECISION ON APPEAL¹

Appellant² appeals the Examiner's final rejection of claims 1–3 and 5–9, which constitute all the claims pending in this application. 35 U.S.C. § 134(a). We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

¹ In this decision, we refer to the Final Office Action appealed from, mailed April 7, 2014 (“Final Act.”), the Appeal Brief dated September 8, 2014 (“App. Br.”), and the Examiner’s Answer to the Appeal Brief dated October 24, 2014 (“Ans.”), and the Reply Brief dated December 9, 2014 (“Reply Br.”).

² Appellant identifies Toyota Jidosha Kabushiki Kaisha as the real party in interest. App. Br. 2.

The Claimed Invention

Appellant's disclosure relates to a fuel separator. Spec. ¶ 1; Abstract. Claim 1 is representative of the claims on appeal and is reproduced below from the Claims Appendix to the Appeal Brief (App. Br. 14, 15) (key disputed limitations italicized):

1. A fuel cell separator, comprising:
 - a first plate;
 - a second plate;
 - a first manifold for first reactive gas supply formed on outer circumferences of the first plate and the second plate; and
 - a second manifold for first reactive gas exhaust formed on the outer circumferences;
 - a third manifold for second reactive gas supply formed on the outer circumferences;
 - a fourth manifold for second reactive gas exhaust formed on the outer circumferences,
 - wherein the first plate has a plurality of strip-shaped first projections protruded toward the second plate to define a plurality of first reactive gas flow paths,
 - the second plate has a plurality of strip-shaped second projections protruded toward the first plate to define a plurality of second reactive gas flow paths,
 - a top of each of the plurality of the first projections is in contact with a bottom of a recess arranged between adjacent two of the plurality of the second projections formed on the second plate,
 - a top of each of the plurality of the second projections is in contact with a bottom of a recess arranged between adjacent two of the plurality of the first projections formed on the first plate,
 - the first reactive gas flow paths are alternately connected with the first manifold and the second manifold,
 - the first reactive gas flow paths have closed ends that are opposite to respective connection ends alternately connecting with the first manifold and the second manifold,
 - the second reactive gas flow paths are alternately connected with the third manifold and the fourth manifold,

the second reactive gas flow paths have closed ends that are opposite to respective connection ends alternately connecting with the third manifold and the fourth manifold, and a cooling water flow path is formed between the first plate and second plate, and

the first reactive gas flow paths, the cooling water flow paths and the second reactive gas flow paths are arranged alternately one by one to form a single line along a perpendicular direction against the stacking direction of the first plate and the second plate,

wherein the first reactive gas flow paths are made of two types of reactive gas flow paths, one type is a first reactive gas flow supply path and the other is a first reactive gas flow exhaust path,

wherein the second reactive gas flow paths are made of two types of second reactive gas flow paths, one type is a second reactive gas flow supply path and the other is a reactive gas flow exhaust path, and

wherein the first reactive gas from the first reactive gas flow supply path to the first reactive gas flow exhaust path flows in a direction opposite to a direction in which the second reactive gas flows from the second reactive gas flow supply path to the second reactive gas flow exhaust path.

The References

The Examiner relies on the following references as evidence in rejecting the claims on appeal:

| | | |
|--------------------------------------|--------------------|---------------|
| Goebel | US 2005/0058864 A1 | Mar. 17, 2005 |
| Hirotaoka (hereinafter "JP '578") | JP 2005-32578 A | Feb. 3, 2005 |

The Rejection

On appeal, the Examiner maintains the following rejection:

Claims 1–3 and 5–9 stand rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Goebel in view of JP '578. Ans. 4; Final Act. 2.

OPINION

The Examiner determines that the combination of Goebel and JP '578 suggests a fuel separator satisfying all of the limitations of claim 1 and that the prior art combination would have rendered claim 1 obvious. Ans. 4–9 (citing Goebel, Fig. 3, ¶¶ 24, 32; JP '578, Fig. 12, ¶ 27). The Examiner finds that Goebel teaches the majority of claim 1's limitations, but that it does not teach “a first manifold, a second manifold, a third manifold and a fourth manifold,” as recited in the claim. *Id.* at 4 (citing Goebel, Fig. 3). The Examiner, however, relies on JP '578 for disclosing these missing limitations. *Id.* at 4, 5. In particular, the Examiner finds that JP '578 teaches “a first manifold (7), a second manifold (13), a third manifold (19) and a fourth manifold (21).” *Id.* at 4, 5 (citing JP '578, Fig. 12).

Based on the above findings, the Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to “modify the teachings of Goebel with the teachings of [JP '578] in order to design a fuel cell with a slimmed down separator that maintains its cooling capacity” and to “optimize the performance of both the fuel cell and the fuel cell separator.” Ans. 5, 6.

The Examiner further concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Goebel in the manner claimed “in an effort to create a fuel cell separator with the desired cooling flow channels, fuel and oxidant flow paths while minimizing the required distance between adjacent [membrane electrode assemblies].” Ans. 8.

Appellant argues that the Examiner's rejection of claim 1 should be reversed because the cited references do not teach the: (a) “*two types of*

reactive gas flow paths,” (b) “*two types of second reactive gas flow paths,*” and (c) “*a direction opposite to a direction*” limitations as required by the claim. App. Br. 6. Appellant further argues that the Examiner has failed to adequately explain or identify sufficient evidence explaining why one of ordinary skill would have been motivated to modify the prior art fuel separator in the manner claimed. *Id.* at 10, 12. In particular, Appellant argues that the “Office Action cites to *no portion* of Goebel and provides *no explanation* as to why . . . a person of ordinary skill in the art would have modified Goebel’s fuel separator to arrive at claimed invention.” *Id.* at 12.

We concur with Appellant’s argument. Based on the record before us, we are not persuaded that the Examiner has provided an adequate technical explanation or identified sufficient evidence explaining why one of ordinary skill would have had reason to modify Goebel’s fuel separator to arrive at the claimed invention. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (requiring “reasoning with some rational underpinning to support the legal conclusion of obviousness”) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)); *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992) (holding that the examiner bears the initial burden of establishing a prima facie case of obviousness).

The Examiner does not adequately explain why one of ordinary skill would have been motivated to modify Goebel’s fuel separator to arrive at the claimed invention. As Appellant correctly points out (App. Br. 9), Goebel describes a fuel cell assembly and configuration that differs from the claimed invention. In particular, Goebel discloses a fuel cell assembly having a single, continuous serpentine flow path from the reactive gas supply manifold to the reactive gas exhaust manifold. Goebel, ¶ 6, Fig. 2.

In contrast, the claimed invention discloses a structure where the first and second reactive gas flow paths are made of two types of reactive gas flow paths and “the first reactive gas . . . flows in *a direction opposite to a direction* in which the second reactive gas flows . . . to the second reactive gas flow exhaust path.” Claim 1 (emphasis added); Spec. Fig. 1.

The Examiner, however, does not meaningfully address the differences between the claimed invention and Goebel’s continuous serpentine structure or adequately explain why one of ordinary skill would have been motivated to modify Goebel’s structure to arrive at the claimed invention.

The Examiner’s determination that it would have been obvious one of ordinary skill to modify Goebel’s structure because “doing so would create a fuel cell separator with the desired cooling flow paths, fuel and oxidant flow paths, while minimizing the required distance between the adjacent membrane electrode assemblies” (Ans. 18) is conclusory and, without more, insufficient to sustain the Examiner’s obviousness conclusion and findings in this regard. *Kahn*, 441 F.3d at 988 (Fed. Cir. 2006) (holding “rejections on obviousness grounds cannot be sustained by mere conclusory statements”).

The Examiner’s assertion that one of ordinary skill “could interpret” Goebel’s serpentine channels to read on claim 1’s in a direction opposite to a direction limitation (Ans. 18) is also conclusory and equally insufficient to satisfy the Examiner’s evidentiary burden in this regard. *Oetiker*, 977 F.2d at 1445. As noted by Appellant (Reply Br. 3–5; App. Br. 12), the Examiner does not identify or cite to any specific portions of Goebel—or elsewhere in the record—that adequately support this assertion.

Accordingly, we reverse the Examiner's rejection of claims 1–3 and 5–9 under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over the combination of Goebel and JP '578.

DECISION

The Examiner's rejections of claims 1–3 and 5–9 are reversed.

It is ordered that the Examiner's decision is reversed.

REVERSED