The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ULRICH STIMMING, KASPAR,
ANDREAS FRIEDRICH AND WOLFGANG UNKAUF[1]

Appeal 2007-1259
Application 10/054,213
Technology Center 1700

Decided: June 21, 2007

Before JAMESON LEE, ROMULO DELMENDO, SALLY GARDNER LANE, *Administrative Patent Judges*.

LANE, *Administrative Patent Judge*.

DECISION ON APPEAL

I. Statement of the case

This ex parte appeal under 35 U.S.C. § 134(a) is from a rejection of claims 1-5, 8, 10, and 11.

We AFFIRM the rejection.

We have jurisdiction under 35 U.S.C. § 6(b).

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[1] We will refer to the inventors collectively as "Stimming" in this Decision.

The application, 10/054,213 ('213), was filed on 13 November 2001. The real party in interest is said to be the inventors, Ulrich Stimming, Kaspar Andreas Friedrich, and Wolfgang Unkauf, and the assignee, Mannesmann AG (Supplemental Appeal Brief (Brief) at 2).

The Examiner relies upon US patent 6,096,448, issued 1 August 2000, to Wilkinson et al. (Wilkinson) in rejecting the claims.

According to Stimming in the "Supplemental Appeal Brief" which is said to supersede the earlier filed Appeal Brief, "there is no only one Ground of Rejection to be Reviewed" which is the rejection under 35 USC §102(b) over Wilkinson. (Br.1- 3).[2] The Examiner notes that only claims 1-5, 8, 10, and 11 are rejected under 35 USC § 102(b) and that Stimming has not appealed the rejection of claims 6, 7, 9, 12, and 13 under 35 USC § 103(a). (Answer 3).[3]

Stimming has not asked for review of, nor provided any arguments concerning, any rejection other than the rejection made under 35 USC §102(b). Thus, we confine our review to the Examiner's rejection under 35 USC § 102(b).

We AFFIRM the rejection.

III. Issue

Whether Stimming has shown that the limitation, "a means for impressing a positive voltage pulse on the anode", as it appears in claim 1 is not anticipated by the fuel starvation methods recited in Wilkinson?

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[2] When we refer to the "Brief" in the decision, we are referring to the "Supplemental Brief".

[3] We note that Stimming does not take issue with the Examiner's characterization of the rejection on appeal in the Stimming Reply Brief.

III. Findings of fact

The record supports the following findings of fact as well as any other findings of fact set forth in this decision by a preponderance of the evidence.

1. According to the '213 Specification "[t]he present object of the present invention is to provide a fuel cell in which power losses caused by contaminants [such as carbon monoxide] adsorbed at the anode catalyst can be avoided inexpensively and reliably." (Specification at 4).
2. To achieve this object, a fuel cell having an anode-cathode unit is provided along with "means which impress a positive voltage pulse on the anode" of the cell. (Specification at 4).
3. According to the '213 Specification:

   > To produce a suitable positive voltage pulse, means which produce a temporary short circuit between the anode and cathode are provided for example. Alternatively, means which bring about a pulsed feeding in of external electrical energy, which is supplied to the anode, are provided…The variant first described, with the short circuit, has the advantage over the feeding in of external energy in that there is no need for an external energy source.

   (Specification at 4).
4. Claim 1 is representative and is as follows:

   A fuel cell, comprising:

   An anode-electrolyte-cathode unit having an anode catalyst; and

   means for impressing a positive voltage pulse on the anode, wherein the fuel cell has a voltage that does not change sign and at most becomes zero so that U (fuel cell) = U (cathode) – U (anode) ≥ 0.

5. Claim 2 is as follows:

> A method for removing carbon monoxide from an anode catalyst of a fuel cell comprising the step of impressing at least one positive voltage pulse on the anode, wherein the fuel cell has a voltage that does not change sign and at most becomes zero so that U (fuel cell) =U (cathode) – U(anode) ≥ 0.

6. Stimming does not separately argue any of the claims on appeal and thus we consider the rejection of those claims to stand or fall with the rejection of claim 1.
7. Wilkinson teaches a method and apparatus for operating an electromechanical fuel cell with periodic momentary fuel starvation at the anode. (Wilkinson at 1:8-12).
8. According to Wilkinson "when the method is applied, the fuel cell performance after the momentary starvation is improved…due to the oxidation of electrocatalyst poisons [such as CO], which is facilitated as the anode potential increases as occurs during fuel starvation." (Wilkinson at 3:3-11).
9. In Wilkinson, fuel starvation is accomplished by: (1) "periodically interrupting the supply of the fuel stream to the fuel cell anode" (Wilkinson at 3:18-24), (2) "periodically introducing pulses of a substantially fuel-free fluid into the fuel stream upstream of the fuel cell anode" (Wilkinson at 3:36-40), or (3) "periodically connecting a transient electrical load to draw electrical power from the fuel cell" (Wilkinson at 4:23-27).

10. According to the Examiner, "[e]ach of these methods would 'impress' a positive voltage pulse on the anode." (Answer 4).
11. The Examiner directs us to Stimming's statement that "[a]lthough fuel starvation at the anode achieves the same results as the claimed invention, i.e., an increase in the anode potential, Wilkinson achieves the result using an entirely different solution." (Answer 7).
12. The Examiner directs us to Fedkiw et al. (Fedkiw)[4] which states that "[a] periodic, pulsed-potential control strategy was examined as a means to regenerate *in situ* a platinum electrode which was otherwise poisoned by methanol oxidation."

IV. Principles of Law

Anticipation

To anticipate a claim, a prior art reference must disclose every limitation of the claimed invention, either expressly or inherently. *In re Schreiber*, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997).

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the Specification and equivalents thereof. 35 USC § 112,¶ 6. Thus, "a means-plus-function claim encompasses all structure in the Specification corresponding to that element and equivalent structures." *Micro Chem. Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258, 52 USPQ2d 1258, 1263 (Fed. Cir. 1999). To anticipate a means-plus-function limitation, the

[4] Fedkiw et al., J. Electrochem. Soc., 135:10 (1998), p. 2459-2465.

structure of the prior art must be equivalent and the function identical. *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 934, 4 USPQ2d 1737, 1739 (Fed. Cir. 1987) (in banc).

V. Legal Analysis

Since the rejection of the claims under 35 USC §102(b) stands or falls with the rejection of claim 1, our discussion is limited to claim 1 but applies to all the claims on appeal.

Stimming appears to assert that "impressing a positive voltage pulse on the anode" requires supplying a pre-formed or already-generated positive voltage pulse to the anode and therefore none of Wilkinson's fuel starvation techniques can meet the requirement. The argument is without merit, as even Stimming's disclosed method of short circuiting the anode and the cathode does not supply a pre-formed voltage pulse from the cathode to the anode and Stimming's other disclosed method of connecting the anode to an external voltage source is not described in the Specification as supplying a pre-formed or already-generated voltage pulse from the external energy source to the anode. We interpret "impressing a positive voltage pulse on the anode" as simply causing the appearance of a positive voltage pulse on the anode, which Stimming does not deny all of Wilkinson's fuel starvation methods do.

After setting forth an analysis under 35 USC §112, ¶6, which we need not repeat here, the Examiner construes the claim 1 language, "means for impressing a positive voltage pulse on the anode", as encompassing the methods discussed in Wilkinson for fuel starvation. (Answer 5-6). In particular, the Examiner takes the position that the means for achieving fuel

starvation disclosed by Wilkinson are equivalent to the means for impressing a positive voltage pulse on the anode set forth in the Stimming Specification. The Examiner notes that Wilkinson and Stimming are addressing the same problem and achieve the same results using the same structures (Ans. At 7).

In response, Stimming does not point out where it believes the Examiner's analysis under 35 USC §112, ¶6 to be faulty. Instead, Stimming first acknowledges that "the fuel starvation at the anode disclosed by Wilkinson causes the anode potential to be raised", but then states that "the step of causing fuel starvation can <u>not</u> be considered to read on 'impressing a positive voltage pulse on the pulse on the anode', as recited [in the] independent claims." (Br. 5; See also Reply Br. at 2). We do not find Stimming's statements to be persuasive as Stimming does not provide any reason or supporting evidence that would contradict the Examiner's construction of claim 1. For instance, Stimming does not point to an explicit definition in its Specification that would exclude the Wilkinson means nor does Stimming explain why the means of Wilkinson would not be equivalent to those the Stimming Specification recites.

Apparently Stimming would have us limit the "means for impressing a positive voltage pulse on the anode"of claim 1 to one of the means disclosed in its Specification, i.e., "applying an externally generated voltage or applying the voltage of the cathode to the anode…" (Reply Br. 1-2). However, Stimming does not explain why its claims should be limited to any one of or even all of the means recited in its Specification. Without an explicit statement to the contrary, the language Stimming chose to use in its claim 1, i.e., "means for impressing a positive voltage pulse on the anode",

includes the means recited in the Specification and equivalent means. Stimming has not explained why the Wilkinson's structures are not equivalents thereof. First of all, Stimming acknowledges that the structures recited in its Specification and the Wilkinson structures achieve the same result. As noted by the Examiner, the purpose of Wilkinson is the same as that recited in the Stimming Specification, i.e., to improve fuel cell performance by removing contaminants such as carbon monoxide. (Answer 6-7). The only argument we have been able to locate in Stimming's brief that possibly could be construed to address whether the structures of Wilkinson and Stimming are equivalent is at page 5 of the brief where Stimming, in discussing obviousness (which is not the rejection at hand, see our discussion below), states:

> Furthermore, Wilkinson raises the anode potential without the need for means for impressing a positive voltage pulse to the anode. In contrast to the claimed invention, Wilkinson manipulates the fuel supply to the anode using the already existing fuel supply controller. Since Wilkinson teaches how to raise the anode potential using a pre-existing part of the fuel cell, Wilkins provides no motivation for providing the means for impressing a positive voltage pulse to the anode. Therefore, independent claims 1 and 2 are also not rendered obvious by Wilkinson under 35 U.S.C. § 103.

This portion of the Brief essentially states that Stimming and Wilkinson do not use the exact <u>same</u> structure to achieve the desired result. However, Stimming has not explained why the structure it uses to impress the positive voltage pulse is not <u>equivalent</u> to the structure Wilkinson teaches to impress a positive voltage pulse. While we could speculate on reasons why the structures might not be equivalent, it is Stimming's place,

not ours, to show why the Examiner's determination that the structures are equivalent is in error. Arguments not made in the brief are waived. Bd.R. 41.37(c)(1)(vii).

Secondly, Stimming argues that "Wilkinson raises the anode potential without the need for means for impressing a positive voltage pulse to the anode" and thus "provides no motivation for providing the means for impressing a positive voltage pulse to the anode." (Br. 5). A discussion of motivation is not relevant to a determination of anticipation under 35 USC § 102(b). We need not and do not address Stimming's argument concerning motivation to modify Wilkinson.

We note that claim 2 was not argued separately (see Bd.R. 41.37(c)(1)(vii) requiring separately argued claims to be placed under a subheading and noting that "[a] statement which merely points out what a claim recites will not be considered an argument for separate patentability.") Nonetheless, we note that claim 2 is a method claim and does not contain means plus function language. The claimed method step of "impressing at least one positive voltage pulse on the anode" is, as discussed above, met by the fuel starvation methods disclosed in Wilkinson. In particular, Wilkinson teaches a method of removing carbon monoxide from an anode catalyst and does so by fuel starvation which would, as Stimming concedes, result in a positive voltage pulse on the anode.

VI. Conclusion

Stimming has not shown that "a means for impressing a positive voltage pulse on the anode" as it appears in claim 1 is not anticipated by the fuel starvation methods recited in Wilkinson.

VII.

Upon consideration of the record and for reasons given, it is

ORDERED that the Examiner's rejection of claims 1-5, 8, 10, and 11 under 35 USC 102(b) is AFFIRMED; and

FURTHER ORDERED that no time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

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

AFFIRMED

smt

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