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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MOHAMMED E. SENNOUN and
ROBERT C. REID

Appeal 2012-002625
Application 10/912,298
Technology Center 1700

Before CHUNG K. PAK, TERRY J. OWENS, and
KAREN M. HASTINGS, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

The Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1, 3, 5, 7, 9, 11, 13 and 15, which are all of the pending claims. We have jurisdiction under 35 U.S.C. § 6(b).

The Invention

The Appellants claim an apparatus for humidifying the cathode and anode inlet streams to a fuel cell. Claim 1 is illustrative:

1. A product comprising:

a cathode inlet conduit for carrying a cathode inlet stream;

an anode inlet conduit for carrying an anode inlet stream;

a humidifier provided in fluid communication with said cathode inlet conduit and said anode inlet conduit for receiving and humidifying said cathode inlet stream and said anode inlet stream;

a fuel cell provided in fluid communication with said humidifier for receiving said cathode inlet stream and said anode inlet stream from said humidifier;

a cathode humidifier bypass conduit connecting said cathode inlet conduit to said fuel cell for selectively shunting said cathode inlet stream around said humidifier to said fuel cell;

an anode humidifier bypass conduit connecting said anode inlet conduit to said fuel cell for selectively shunting said anode inlet stream around said humidifier to said fuel cell;

a cathode humidifier bypass valve provided in fluid communication with said cathode inlet conduit and said cathode humidifier bypass conduit,

and wherein said cathode humidifier bypass valve is in a position to block the flow of said cathode inlet stream into said humidifier and to allow the flow of said cathode inlet stream around said humidifier and into said fuel cell;

an anode humidifier bypass valve provided in fluid communication with said anode inlet conduit and said anode humidifier bypass conduit, and wherein said anode humidifier bypass valve is in a position to block the flow of said anode inlet stream into said humidifier and to allow the flow of said anode inlet stream around said humidifier and into said fuel cell; and

a drive motor connected to said fuel cell so that current flows thereto when said cathode humidifier bypass valve and said anode humidifier bypass valve are in a position to block the flow of said cathode inlet stream and said anode inlet stream into said humidifier and to allow the flow of said cathode inlet stream and said anode inlet stream around said humidifier and into said fuel cell;

wherein said cathode humidifier bypass valve and said anode humidifier bypass valve are operatively associated with said fuel cell and configured to synchronously block the flow of said cathode inlet stream and said anode inlet stream to said humidifier in response to a drop in voltage of said fuel cell.

The References

Katagiri	US 2001/0010875 A1	Aug. 2, 2001
Wheat	US 2002/0164509 A1	Nov. 7, 2002

The Rejections

Claims 1, 3, 5, 7, 9, 11, 13 and 15 stand rejected under 35 U.S.C. § 103 over Wheat or Katagiri, each in view of the Appellants' admitted prior art.

OPINION

We reverse the rejection over Wheat in view of the Appellants' admitted prior art and affirm the rejection over Katagiri in view of the Appellants' admitted prior art.

*Rejection over Wheat in view of the
Appellants' admitted prior art*

We need to address only the independent claims, i.e., claims 1 and 9. Each of those claims requires blocking the flow of cathode and anode inlet streams to a humidifier in response to a drop in fuel cell voltage.

Wheat discloses a system which controls the humidity of fuel cell cathode and anode inlet streams by controlling, based upon a humidity sensor (78), the extent to which the cathode and anode inlet streams are bypassed around a humidifier (54) (¶¶ 0019, 0026, 0028, 0032).

The Examiner argues that Wheat's fuel cell system is capable of blocking the flow of cathode and anode inlet streams to a humidifier in response to a drop in voltage of a fuel cell (Ans. 6).

That argument is not well taken because the Examiner has not established, by evidence or technical reasoning, that Wheat's system has that capability. The Examiner's mere speculation to that effect is not sufficient for establishing a prima facie case of obviousness. *See In re Warner*, 379 F.2d 1011, 1017 (CCPA 1967); *In re Sporck*, 301 F.2d 686, 690 (CCPA 1962). Accordingly, we reverse the rejection over Wheat in view of the Appellants' admitted prior art.¹

¹ The Examiner's reliance upon Katagiri in the rejection over Wheat in view of the Appellants' admitted prior art is improper because Katagiri is not

*Rejection over Katagiri in view of the
Appellants' admitted prior art*

Katagiri discloses a fuel cell which, when the output is 10-60 kw, requires a degree of humidification which results in a dew point of 50-70 °C (¶ 0051). Katagiri determines whether the cell voltage is above or below a threshold value (V) (¶ 0047). When the cell voltage is above the threshold value (V) Katagiri obtains the dew point from a normal dew point map and when the cell voltage is equal to or below the threshold value (V) Katagiri obtains the dew point from a low dew point map (¶¶ 0049-50). When the dew point is above a threshold value (SV) a flow regulating valve (22) is opened to decrease the dew point, and when the dew point is equal to or below the threshold value (SV) the flow regulating valve (22) is closed to increase the dew point (¶ 0052).

The Appellants argue that the flow to Katagiri's humidifier (6) cannot be blocked because Katagiri's flow regulating valve (22) is positioned in the reaction gas bypass passage (21) (Fig. 1) (Br. 16-17).

"A person of ordinary skill is also a person of ordinary creativity, not an automaton." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007). In making an obviousness determination one "can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR*, 550 U.S. at 418.

Katagiri's disclosure that the humidifier (6) is bypassed (¶ 0045) indicates that the humidifier can be bypassed completely. Katagiri's disclosure that "[t]he flow regulating valve **22** may be provided at a different

included in the statement of the rejection and, therefore, is not before us as to that rejection. *See In re Hoch*, 428 F.2d 1341, 1342 n.3 (CCPA 1970).

position other than the reaction gas bypass passage 21” (¶ 0069) would have led one of ordinary skill in the art, through no more than ordinary creativity, to position the flow regulating valve (22) at a position which can provide complete bypass of the humidifier (6), e.g., in the line to the humidifier (6) (Fig. 1).

The Appellants argue that Katagiri’s flow regulating valve (22) is not “operatively associated with the fuel cell 1 and configured to synchronously block the flow of a cathode inlet stream and an anode inlet stream to the humidifier 6 in response to a drop in fuel cell voltage at the fuel cell 1” (Br. 17).

The Appellants’ underlining indicates that the argued claim limitation is “to synchronously block the flow of said cathode inlet stream and said anode inlet stream to said humidifier”. It appears that control of the humidity of Katagiri’s inlet air (which corresponds to the Appellants’ cathode inlet stream) and inlet hydrogen (which corresponds to the Appellants’ anode inlet stream) (¶¶ 0038, 0045, 0069), if based upon the same threshold cell voltage, necessarily is synchronous. Regardless, Katagiri’s disclosure that the humidification system can be used to control the humidity of both the inlet air and the inlet hydrogen (¶¶ 0038, 0069) would have led one of ordinary skill in the art, through no more than ordinary creativity, to configure the humidification system to be capable of providing both synchronous and non-synchronous partial or complete blocking of the cathode and anode inlet stream flows to the humidifier so that the blocking of each inlet stream can occur when and to the extent needed throughout the fuel cell operation.

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For the above reasons we are not persuaded of reversible error in the rejection over Katagiri in view of the Appellants' admitted prior art.

DECISION/ORDER

The rejection of claims 1, 3, 5, 7, 9, 11, 13 and 15 under 35 U.S.C. § 103 over Wheat in view of the Appellants' admitted prior art is reversed. The rejection of claims 1, 3, 5, 7, 9, 11, 13 and 15 under 35 U.S.C. § 103 over Katagiri in view of the Appellants' admitted prior art is affirmed.

It is ordered that 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(a).

AFFIRMED

tc