

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 ALFRED I-TSUNG PAN and HOWARD TAUB

Appeal 2007-0655
Application 10/314,157
Technology Center 1700

Decided: January 31, 2007

Before EDWARD C. KIMLIN, CHUNG K. PAK, and THOMAS A. WALTZ, *Administrative Patent Judges*.

KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-2 and 4-12. Claim 3 has been allowed and claims 13-20 have been withdrawn from consideration. Claim 1 is illustrative:

1. A fuel delivery system for a liquid-type fuel cell using diluted fuel, said system comprising:

a fuel tank containing a concentrated fuel; and

a fuel controller connecting said fuel tank to a reservoir of diluted fuel;

wherein the fuel controller delivers both concentrated fuel and water into the reservoir of diluted fuel, and wherein said fuel controller delivers the concentrated fuel to the reservoir of diluted fuel when the fuel concentration of the diluted fuel falls below a predetermined level.

The Examiner relies upon the following references in the rejection of the appealed claims:

Okamoto	5,723,228	Mar. 3, 1998
Shimotori	6,572,994 B1	Jun. 3, 2003
Acker	6,821,658 B2	Nov. 23, 2004

Appellants' claimed invention is directed to a fuel delivery system for a liquid-type fuel cell comprising a fuel tank containing a concentrated fuel, and a fuel controller which connects the tank to a reservoir of diluted fuel. The fuel controller delivers concentrated fuel and water into the reservoir, and delivers concentrated fuel to the reservoir of diluted fuel when the concentration falls below a predetermined level.

Appealed claims 1 and 4-6 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Shimotori. Claims 1 and 7-12 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Acker. Also, claim 2 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Acker in view of Okamoto.

We have thoroughly reviewed each Appellants' arguments for patentability. However, we find that the Examiner's rejections are well-founded and supported by the prior art evidence relied upon. Accordingly,

we will sustain the Examiner's rejections for essentially those reasons expressed in the Answer.

We consider first the Examiner's § 102 rejection of claims 1 and 4-6 over Shimotori. We agree with the Examiner that Shimotori describes, within the meaning of § 102, a system comprising a fuel tank containing a concentrated fuel (107), and a fuel controller (117) that connects to and delivers to a reservoir 116 of diluted fuel and water.

A principal argument of Appellants is that Shimotori fails "to teach a 'fuel controller' which 'delivers' both fuel and water or a fuel controller that is even capable of delivering both fuel and water" (Br. 11 last sentence). Appellants contend that fuel tank 107 of Shimotori delivers neat methanol, not a solution of methanol and water. However, the Examiner has presented evidence to support the position that neat methanol also contains water and, indeed, the portion of the Acker reference cited by Appellants supports the Examiner's position since Acker describes neat methanol as "more highly concentrated" (Acker col. 4, l. 20). Manifestly, a concentrated methanol solution also contains water.

Moreover, we agree with the Examiner that control unit 117 delivers concentrated fuel through pump 114 to, ultimately, reservoir 116, as well as delivering water through pump 115 to reservoir 116. We note that neither Appellants' principal nor Reply Briefs addresses this rationale of the Examiner.

We now turn to the Examiner's § 102 rejection over Acker. We agree with the Examiner that Acker describes within the meaning of § 102 a fuel delivery system comprising a fuel tank 201 containing a concentrated fuel and a fuel controller, element 301 or pump 202, which connects the fuel tank

201 to a reservoir of diluted fuel, line 205. As pointed out by the Examiner, Acker expressly discloses that “[p]ump **202** may be designed so as to control the proportions of flow of each of the water, neat methanol, and fuel solution input streams” (Acker col. 4, ll. 8-11). In our view, controller 301 controls and delivers concentrated fuel and water to a reservoir not depicted in the drawings, and pump 202 connects and delivers concentrated fuel and water to reservoir 205. We find no error in the Examiner’s reasoning that “[a] reservoir is any device that has the capacity to store a volume of something no matter what said capacity is, so a pipe is perfectly capable of being a reservoir and so are mixers, vaporizers, evaporators and even pumps” (Answer 5, ¶ 2).

Appellants maintain that element 301 of Acker “**has absolutely no connection with or ability to control a water source**” (Br. 17, ¶ 2). However, as explained above, the fuel delivery assembly 201 of Acker *preferably* is a source of highly concentrated fuel which, necessarily, contains some water and, also, the less preferred, less concentrated fuel would also contain water. Contrary to Appellants’ implicit argument that the reference discloses no *source* of water being controlled, the rejected claims do not define a source of only water.

We also do not subscribe to Appellant’s argument that Acker “is completely silent with respect to determining, measuring, or monitoring a concentration of diluted fuel.” (Br. 18, first full sentence). Appellants acknowledge that element 301 of Acker controls the flow of fuel in response to a temperature sensor, and we agree with the Examiner that sensing the temperature indirectly controls the fuel concentration. As explained by the Examiner, “[a]n indirect way of determining concentration is by using the

fuel mixture in a fuel cell that has an exothermic reaction and then determining the temperature of the exothermic reaction and regulating the fuel based on said temperature” (Answer 5, ¶ 2, last sentence).

Concerning the Examiner’s § 103 rejection of claim 2 over Acker in view of Okamoto, we fully concur with the Examiner that it would have been obvious for one of ordinary skill in the art to substitute the pressure operative valve of Okamaoto for the thermally actuated valve of Acker in order to take advantage of the high pressures that exist in the fuel cell. We do not agree with Appellants’ argument that Acker provides a teaching away from using a pressure operated valve. In our view, one of ordinary skill in the art would have appreciated that substituting a pressure operated valve for the temperature operated valve of Acker would result in the loss of the benefit articulated in Acker. It is well settled that it is a matter of obviousness for one of ordinary skill in the art to eliminate a feature of the prior art along with its attendant advantage. We agree with the Examiner that “[b]ecause valves are well known in the art for their different controlling characteristics, it is within the skill of a person having ordinary skill in the art to substitute one valve for another in order to take advantage of the properties of the systems to control different aspects of the systems” (Answer 6, ¶ 1). We note that Appellants base no argument upon objective evidence of nonobviousness, such as unexpected results.

Appellants lodge a complaint that the finality of the Examiner’s Action of January 19, 2006 is improper. However, as explained by the Examiner, this is a petitionable matter not subject to our appellate review.

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In conclusion, based on the foregoing, the Examiner's decision rejecting the appealed claims 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)(1)(iv)(2007).

AFFIRMED

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