The opinion in support of the decision being entered today
is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte STEPHEN D. TUOMELA

Appeal 2007-1384
Application 10/122,683
Technology Center 1700

Decided: August 28, 2007

Before BRADLEY R. GARRIS, CHUNG K. PAK, and
CHARLES F. WARREN, *Administrative Patent Judges*.

GARRIS, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the final rejection of claims 1-5 and 8. We have jurisdiction under 35 U.S.C. § 6.

We AFFIRM.

Appellant claims an apparatus for detecting oxygen which comprises a pair of galvanic cells containing KOH as an electrolyte and an absorbent material containing an aqueous sodium chloride solution for humidifying the galvanic cells.

Representative claim 1 reads as follows:

1. An apparatus for detecting oxygen in a test gas flow through a galvanic cell of the type which develops a current flow between a cell cathode and anode representative of oxygen content in the test gas; comprising:

a. a pair of galvanic cells inside a sealed enclosure, said cells containing KOH as an electrolyte and connected in series gas flow arrangement, with an input adapted for connection to a source of test gas and an output adapted for connection to a gas exhaust;

b. means for electrically connecting said galvanic cells to provide an electrical signal representative of the oxygen content of said gas flow; and

c. an absorbent material inside said sealed enclosure, said absorbent material containing an aqueous sodium chloride solution for humidifying the galvanic cells.

The references set forth below are relied upon by the Examiner as evidence of obviousness:

Mayer	US 4,973,395	Nov. 27, 1990
Fitterman	US 5,957,380	Sep. 28, 1999

All appealed claims are rejected under 35 U.S.C. § 103 (a) as being unpatentable over Mayer in view of Fitterman.[1]

On this record, it is undisputed that Mayer discloses all aspects of the claim 1 apparatus except for the use of an aqueous sodium chloride solution for humidifying the galvanic cells. In Mayer's apparatus, KOH is used as the humidifying solution as well as the electrolyte. According to the Examiner, it would have been obvious for one with ordinary skill in this art to replace Mayer's KOH solution with a sodium chloride solution for humidifying the galvanic cells in view of Fitterman's teaching of using a sodium chloride solution for humidifying purposes.

Appellant argues that an artisan would not have modified the Mayer apparatus in the manner proposed by the Examiner because the artisan would have believed that the electrolyte and the humidifying solution needed to be the same salt in order to avoid deleterious cross-contamination (Br. 4). As support for this argument, Appellant relies on the § 1.132 Affidavit of record by Michelle Stevens (*id.*) and particularly relies on ¶ 12 of this Affidavit (*id.* at 5). Paragraph 12 of the Stevens Affidavit is reproduced below:

> 12. Prior to filing of the Application, it was widely accepted that (i) KOH was the electrolyte of choice due [sic] in an oxygen sensor due to its sensitivity to oxygen, while (ii)

[1] Appellant has not separately argued the rejected claims (Br. 4-5). Accordingly, in assessing the merits of the rejection on appeal, we will focus on claim 1 which is the sole independent claim before us. The remaining claims under rejection will stand or fall with claim 1.

> NaCl solutions were the humidification solution of choice as NaCl was much more benign than KOH towards both humans and equipment. However, concerns over migration of the humidification solution into the galvanic cell, resulting in contamination of the KOH electrolyte with NaCl, dictated use of the same salt (e.g., either KOH or NaCl) for both the humidifying solution and the electrolyte.

As revealed by this paragraph, it was widely accepted by those with ordinary skill in this art that KOH was the electrolyte of choice whereas a sodium chloride solution was a more desirable humidification medium because it is more benign than KOH. However, concerns over possible contamination "dictated use" (*id.*) of the same salt (either KOH or NaCl) for both the humidifying solution and the electrolyte. The circumstances lead the Affiant (Affidavit 3, ¶ 13) as well as Appellant (Br. 4) to conclude that it would not have been obvious to use different salts for the humidification solution and the electrolyte. However, the evidence of record including the Stevens Affidavit militates for rather than against a conclusion of obviousness.

This is because the Affidavit evinces that KOH and NaCl were known respectively for use as both an electrolyte and a humidifying solution and that KOH was known as particularly desirable for electrolyte use whereas NaCl was known as particularly desirable for humidifying use. This knowledge and desiderata would have led an artisan to consider using KOH as an electrolyte and NaCl solution as a humidifier.

According to the Affidavit and the Brief, an artisan would not have so-used these different salts because of concerns over possible

contamination (Affidavit 2-3, ¶12; Br. 4). However, the record before us contains no evidence that such concerns were based on scientific study as opposed to unfounded assumption.

In any event, the fact remains that the use of KOH as an electrolyte and NaCl solution as a humidifier unquestionably would have been desirable whereas the potential for contamination resulting from this use of different salts would have been merely a possibility. These circumstances support a conclusion that, at a minimum, it would have been obvious for the artisan to try using these different salts in the manner proposed by the Examiner.

The Supreme Court has recently clarified that a claim can be proved obvious merely by showing that the combination of elements was obvious to try. In this regard, the Supreme Court explained that, "[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp." *KSR Int'l v. Teleflex Inc.*, 127 S. Ct. 1727, 1742, 82 USPQ2d 1385, 1397 (2007).

In this instance, there are only two solutions to the problem of salt-use in an oxygen detecting apparatus of the type under consideration. In the first solution, the same salt is used whereby the possibility of contamination is avoided but at the expense of optimization for both the electrolyte and the humidifier. In the second solution, different salts are used whereby the electrolyte and the humidifier are both optimized but there is a possibility of

cross-contamination. An artisan would have had a reasonable expectation of success for each of these solutions. In the first solution, the successful result would have been less than optimal but possibly longer lasting whereas, in the second solution, the successful result would have been optimized but possibly shorter in length (i.e., due to the possibility of eventual cross-contamination).

In light of these considerations, it would have been obvious for an artisan to try using different salts in the manner proposed in order to optimize the electrolyte and humidifier functions based upon a reasonable expectation of success.

Concerning this matter, Appellant states "Applicant surprisingly discovered that such cross-contamination of the electrolyte and the humidifying solution simply does not occur to any appreciable extent" (Br. 4). In response, we emphasize that, on this record, it is unknown whether Appellant's discovery was surprising on the basis of unfounded assumption versus scientific study regarding the possibility of contamination. Moreover, the Examiner has reasonably determined that cross-contamination in Mayer's apparatus would not have been expected because the electrolyte salt and the humidifier salt are separately compartmentalized (Answer 9), and Appellant does not argue otherwise in the record of this appeal. For these reasons, Appellant's "surprising discovery" cannot be regarded as an unexpected result indicative of nonobviousness.

In light of the foregoing, it is our ultimate determination that the evidence as a whole in the record before us weighs most heavily in favor of an obviousness conclusion. We hereby sustain, therefore, the § 103 rejection of all appealed claims as being unpatentable over Mayer in view of Fitterman.

The decision of the Examiner 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).

AFFIRMED

clj

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