

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board

Paper No. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte M. ALLEN NORTHRUP, YUN-TAI HSUEH,
AND ROSEMARY L. SMITH

Appeal No. 2001-0062¹
Application 08/774,170

ON BRIEF

Before WILLIAM F. SMITH, GARRIS, and MOORE, Administrative Patent Judges.

MOORE, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from a final rejection of claims 1-5, 11, 14-17 and 24. Claims 6-10, 12, 13, and 18-23 are said to be allowable if rewritten in independent form to include all the limitations of the base claim and any intervening claims. (Examiner's Answer, page 2, lines 8-11).

¹ This appeal is related to appeal no. 2001-0103 of application 08/763,465.

CLAIMS

Claim 1 is representative of the claims on appeal, and reads as follows:

1. A microfabricated chemical reactor comprising a sleeve reaction chamber including a slot therein for insertion of reaction fluid and having detection means, the improvement comprising:

said detection means including an electrochemiluminescence cell.

THE REFERENCES

In rejecting the appealed claims under 35 U.S.C. §103, the Examiner relies on the following references:

Pace (Pace)	4,908,112	Mar. 13, 1990
Kamin et al. (Kamin)	5,147,806	Sep. 15, 1992
Hall et al. (Hall)	5,296,191	Mar. 22, 1994
Heller et al. (Heller)	5,632,957	May 27, 1997

THE REJECTIONS

Claims 1-5, 11, 14-18, and 24 stand rejected under 35 U.S.C. §103 as being unpatentable over Heller in view of Hall or Kamin.

Claims 1-5, 11, 14-18, and 24 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Pace in view of Hall or Kamin.

SUMMARY OF DECISION

On consideration of the entire record, we reverse the rejections of record.

DISCUSSION

The Invention

The Appellants' invention as claimed relates to a microfabricated chemical reactor including an electrochemiluminescence (ECL) detector (claim 1) and an ECL cell (claim 16). Although variously described, the basic constituents of the claimed

invention are a chamber or cavity “sleeve”², which is in communication with a slot or opening, and having a pair of spaced electrodes.

The claimed ECL cell is said to be useful for detection of chemical reactions and may be utilized in arrays of individual reaction chambers for a high-throughput microreaction unit, for example for detection of amplified DNA. In a preferred embodiment, the ECL cell is a vertical assembly of micromachined silicon and glass and contains thin-film electrodes (Appeal Brief, page 3, lines 15-16). The assembly also contains micromachined fluid fill ports (Appeal Brief, page 4, lines 2-3).

The Rejection of Claims 1-5, 11, 14-18 and 24 Under 35 U.S.C. §103(a) over Heller in view of Hall or Kamin

The Examiner states that Heller teaches a microfabricated device having a sleeve reaction chamber, with a viewing window and inlet port disposed over a reactive chip. (Examiner’s Answer, page 4, lines 5-8). Fluorescence detection is said to be used in the example, and electrochemiluminescence detection suggested at column 19, line 38 (Examiner’s Answer, page 5, lines 3-5). Hall and Kamin are said to teach an electrochemiluminescence cell includes at least two electrodes, an optical detector, and associated electronics for supplying a desired voltage. The Examiner thus concludes that it would have been obvious to provide the associated electronics taught by Kamin and Hall to Heller’s chamber in order to provide the electrochemiluminescence suggested by Heller (Examiner’s Answer, page 5, lines 10-21).

² The Appellants, in the parent application 08/492,678 advanced the definition of sleeve as “an envelope”, which “enclose[s] completely.”

The Appellants state that the Examiner has failed to point out where in Heller is found a sleeve reaction chamber including a slot, and states that it is clear that the channel 136 of Fig. 9 of Heller, et al. does not teach this feature. (Appeal Brief, page 11, lines 22-24). The Examiner states in reply that Heller teaches an enveloping structure as shown in Figure 9 “having a fluid containment system (136) portion, including viewing window 138 and inlet port 137, disposed over a reactive chip” (Examiner’s Answer, page 8, lines 7-9).

Federal Circuit precedent provides us with guidance with respect to the construction of claims undergoing examination. See Burlington Industries v. Quigg, 822 F.2d 1581, 1583, 3 USPQ2d 1436, 1438 (Fed. Cir. 1987) (claims undergoing examination are given their broadest reasonable construction consistent with the specification); In re Prater, 415 F.2d 1393, 1404 05, 162 USPQ 541, 550-51 (CCPA 1969) (same).

Claim 1 requires a sleeve reaction chamber having a slot for insertion of reaction fluid, and a detector which is an electrochemiluminescence cell. This claim on its face encompasses a reaction chamber having electrochemiluminescence as a detection means, so long as a slot is included for inserting reaction fluid. The only other independent claim, Claim 16, requires a micromachined cell body having spaced electrodes and a cavity adjacent one of the electrodes and at least one opening therein in communication with said cavity.

We find that the art as applied by the Examiner is insufficient to support the prima facie case of obviousness. The so-called “fluid containment system” of Figure 9, upon closer inspection of the specification of Heller, is a “sample containment vessel 136 to

contain the biological material under analysis or test” (Column 15, lines 39-41). Figure 9 itself does not appear to show anything other than a splash-guard type of arrangement. See especially the oval shaped portions in the upper portion of Figure 9, which support the wall of the sample containment vessel above the reactive chip. Further, the “vessel” is open. This disclosure would not have suggested the invention as claimed to one of ordinary skill in the art. We do not see the sleeve reaction chamber as required by Claim 1, nor the cell body having a cavity adjacent one of the electrodes in claim 17, the only independent claims in this application.

Where the Examiner fails to establish a prima facie case, the rejection is improper and will be overturned. In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

The rejection of Claims 1-5, 11, 14-18, and 24 under 35 U.S.C. §103 as being unpatentable over Heller in view of Hall or Kamin is reversed.

The Rejection of Claims 1-5, 14-18, and 24 Under 35 U.S.C. §103 over Pace in view of Hall or Keller

The Examiner states that Pace teaches a sleeve reaction chamber having slots for communicating with entry holes for performing fluorescence reactions. The slots are said to receive fluid directly from a buffer reservoir and sample chamber. (Examiner’s Answer, page 6, lines 11-14, referencing Pace Figures 1-3, reference numerals 10, 20, 30 and 38).

The Appellants state that the sleeve reaction chamber chamber including a slot therein for insertion of reaction fluid is found nowhere in Pace, and is clearly not taught by channel 32 in Figure 3.

As noted above, Claim 1 requires a sleeve reaction chamber having a slot for insertion of reaction fluid, and a detector which is an electrochemiluminescence cell. Claim 16 requires a micromachined cell body having spaced electrodes, a cavity adjacent one of the electrodes, and at least one opening therein in communication with said cavity.

We focus on figures 1-3 of Pace. As we understand the reference, Pace discloses a trapezoidal channel 32 within base 30. The top of the channel is covered by glass plate 38, forming a trapezoidal enclosed channel. Certainly, this is a sleeve-like chamber or channel, but we fail to see the slot required by claim 1 or the opening of claim 16. The Examiner has determined that elements 10, 20 are slots (and presumably openings). We disagree. Element 10 is part of the electrophoresis channel, and element 20 is the injection conduit. We do not see how these can be slots or openings as required by the instant claims.

Therefore, the rejection of Claims 1-5, 11, 14-18, and 24 under 35 U.S.C. §103 as being unpatentable over Pace in view of Hall or Kamin is reversed.

Summary of Decision

The rejection of Claims 1-5, 11, 14-18, and 24 under 35 U.S.C. §103 as being unpatentable over Heller in view of Hall or Kamin is reversed.

The rejection of Claims 1-5, 11, 14-18, and 24 under 35 U.S.C. §103 as being unpatentable over Pace in view of Hall or Kamin is reversed.

Other Issues

We note that this application is a continuation-in part of application 08/492,678, which issued December 31, 1996 as U.S. Patent 5,589,136. The Examiner should

consider whether a double patenting rejection is appropriate in view of claim 1 of that application.

We also note that Pace, column 8, line 65 to column 9, line 19 describes a method of using the analytical device. One step includes filling reservoirs and samples through an access hole (not shown) in glass plate 38. Neither the Appellants nor the Examiner appear to have considered this disclosure on this record and we commend it to their attention for appropriate consideration. It may be that such an access hole corresponds to the slot required by claim 1 on appeal.

REVERSED

WILLIAM F. SMITH
Administrative Patent Judge

BRADLEY R. GARRIS
Administrative Patent Judge

JAMES T. MOORE
Administrative Patent Judge

)
)
)
)
)
) BOARD OF PATENT
)
) APPEALS AND
)
)
) INTERFERENCES
)
)

JTM/ ki

Appeal No. 2001-0062
Application 08/774,170

HENRY P. SARTORIO
DEPUTY LABORATORY COUNSEL FOR PATENTS
LAWRENCE LIVERMORE NATIONAL LABORATORY
PO BOX 808-L-703
LIVERMORE, CA 94551