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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JAY S. HUEBNER
and Rodolfo T. Arrieta

Appeal 2011-012636
Application 12/074,169
Technology Center 1700

Before MARK NAGUMO, GEORGE C. BEST, and
GRACE KARAFFA OBERMANN, *Administrative Patent Judges*.

NAGUMO, *Administrative Patent Judge*.

DECISION ON APPEAL

A. Introduction¹

Jay S. Huebner and Rodolfo T. Arrieta (“Huebner”) timely appeal under 35 U.S.C. § 134(a) from the final rejection² of claims 1-8 and 10-14.³ We have jurisdiction. 35 U.S.C. § 6. We reverse.

The subject matter on appeal relates to methods of detecting and quantifying target substances in a sample by directly detecting the movement of charge carriers (specifically, electrons, protons, or OH⁻ ions) produced by a dye that is in contact with the target substance.

Representative Claim 1 reads:

A method for detecting the presence of a target substance in a solution comprising the steps of:

providing a sensing device that directly detects and quantifies photo-induced charge movements,

said sensing device comprising a dye disposed on a surface;

said photo-induced charge movements consisting of the movement of ejected electrons, protons or OH⁻ ions from said dye,

thereby producing an electrical signal,

¹ Application 12/074,169, *Sensing Device and Method Using Photo-Induced Charge Movements*, filed 29 February 2008, as a division of application 10/005,717, filed 8 November 2001, now U.S. Patent 7,354,770, which claims benefit of a provisional application filed 8 November 2000. The real party in interest is listed as the University of North Florida. (Appeal Brief, filed 11 January 2011 (“Br.”), 3.)

² Office action mailed 6 June 2010.

³ The Examiner indicates that remaining copending claims 9, 15, and 16 are allowed. (Examiner’s Answer, mailed 1 April 2011 (“Ans.”), 3.)

said ejected electrons, protons or OH⁻ ions resulting from illumination of said dye which is in contact with said target substance;

placing said target substance in contact with said dye;
illuminating said dye;

detecting, quantifying and analyzing said photo-induced charge movements.

(Claims App., Br. 36; paragraphing, indentation, and emphasis added.)

The Examiner maintains the following grounds of rejection:⁴

- A. Claims 1-3, 7, and 8 stand rejected under 35 U.S.C. § 102(b) in view of Clarke.⁵
- B. Claims 4-6 and 10-14 stand rejected under 35 U.S.C. § 103(a) in view of the teachings of Clarke.

B. Discussion

Findings of fact throughout this Opinion are supported by a preponderance of the evidence of record.

As set out in the Brief at pages 15-16, the claims require direct detection of photo-induced movements of electrons, protons, or OH⁻ ions ejected from a dye upon illumination with light. The signal from the dye will vary depending on whether or not a target substance is in contact with the dye.

⁴ Ans. 3, 5, 6.

⁵ David J. Clarke and Freidoun Zamani-Farahani, *Analytical Apparatus Utilizing a Colorimetric or Other Optically Detectable Effect*, U.S. Patent 5,622,868 (1997).

To be anticipatory, a reference must describe, either expressly or inherently, each and every claim limitation, arranged or combined as required by the claimed invention, and enable one of skill in the art to practice an embodiment of the claimed invention without undue experimentation. *See, e.g., In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009). It is well-settled that “[i]nherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1269 (Fed. Cir. 1991) (quoting *In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981) (citations omitted)).

Clarke detects an electrical signal produced by the response of a pyroelectric or other thermo-electric transducer to local heating near or on the transducer. The Examiner’s attempt to explain a broader reading of the term “photo-induced charge movement” in terms of excited states of atoms (Ans. 4) fails because the claims require that the charge carriers be ejected—i.e., removed—from the dye. Although the Examiner finds that “the pyroelectric response would inherently have included at least the ejection of electrons or protons” (Ans. 5, ll. 1-2), the Examiner has not explained why, even if true, the pyroelectric response of Clarke’s detector would necessarily have been due to the ejection of a charge carrier from the dye. In sum, as pointed out by Huebner at length in the Brief, the Examiner has not directed our attention to a disclosure in Clarke of the direct detection of the photo-induced movement of an electron, proton, or OH⁻ ion ejected from a dye.

The Examiner holds the remaining claims to be obvious because further differences, namely the measurement of unreacted dye and the

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selection of the duration of illumination, would have been obvious. These arguments, however, do not correct the fundamental flaw of the anticipation rejection, so we also reverse the obviousness rejection.

C. Order

We reverse the rejections of claims 1-8 and 10-14.

REVERSED

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