

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TAKAYUKI SHIMAMUNE, MASASHI TANAKA,
YASUO NAKAJIMA, YOSHINORI NISHIKI AND
HIDETO SHIMIZU

Appeal No. 2000-0110
Application 08/818,447

ON BRIEF

Before GARRIS, OWENS and DELMENDO, *Administrative Patent Judges*.
OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal is from the refusal to allow claims 1-3, 5-7, 10, 12-17 and 19 as amended after final rejection. These are all of the claims remaining in the application.

THE INVENTION

The appellants' claimed invention is directed toward an electrolysis method for producing acid water and alkaline water. Claim 1 is illustrative:

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1. A method of producing acid water and alkaline water, which comprises providing a water electrolytic cell which is partitioned by a cation-exchange membrane into an anode chamber and a cathode chamber, supplying an aqueous sodium chloride solution having a pH of about 3 to 4 to the anode chamber, supplying water to the cathode chamber, conducting electrolysis, and simultaneously recovering acid water having an oxidation reduction potential of 1,000 mV or higher and a pH of about 3 to 4 from the anode chamber and weak alkaline water having an oxidation reduction potential of 200 mV or less and a pH of from 7 to 9.5 from the cathode chamber.

THE REFERENCES

Themy et al. (Themy)	3,616,355	Oct. 26, 1971
Okazaki	4,867,856	Sep. 19, 1989
Shiramizu et al. (Shiramizu)	5,543,030	Aug. 6, 1996
Okasaki et al. (JP '478) ¹ (Japanese patent application)	5-237478	Sep. 17, 1993

THE REJECTIONS

The claims stand rejected under 35 U.S.C. § 103 as follows: claims 1-3, 5-7, 10, 13, 14, 16, 17 and 19 over Shiramizu in view of Themy or JP '478, and claims 12 and 15 over these references further in view of Okazaki.

OPINION

We reverse the aforementioned rejections.

Shiramizu discloses an electrolysis method for producing water, particularly water used for wet treatment of semiconductor

¹ Citations herein to JP '478 are to an English translation thereof, a copy of which is provided to the appellants with this decision.

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wafers (col. 1, lines 9-12). Shiramizu places pure water containing electrolyte in anode and cathode sub-cells of an electrolytic cell, the sub-cells having between them a partition membrane which allows ions, but not water, to pass therethrough (col. 2, lines 30-32 and 56-61). The exemplified electrolyte is ammonium chloride (col. 9, lines 59-61). The exemplified pH and oxidation reduction potential of the anodic water at the beginning of a storage period are, respectively, about 1.5 and about 1200 mV, and the corresponding values for the cathodic water are about 10.5 and about -800 mV (col. 4, lines 13-49; figure 2).

They disclose a method for generating chlorine by electrolysis of sodium chloride brines (col. 2, lines 15-19). The portions of They relied upon by the examiner are a teaching that tap Palo Alto tap water contains 5 mg/l NaCl (col. 4, lines 5-6), and a table which discloses generation of ozone and chlorine by electrolysis of various solutions, one of which contains HCl (col. 5, lines 25-45).

JP '478 discloses a method for manufacturing a sterilization solution by electrolyzing a mixture of water, sodium chloride and hydrochloric acid in a diaphragm-less vessel (pages 5-6). The portions of JP '478 relied upon by the examiner are a disclosure

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of pH and chloride concentrations similar to those recited in the appellants' claims (page 2), and a teaching that HCl prevents adhesion of calcium to a cathode (pages 5 and 10).

The examiner argues that Shiramizu teaches that it was known in the art to use tap water as an electrolyte, and that because tap water contains sodium chloride, using tap water in Shiramizu's anode and cathode sub-cells would provide the aqueous sodium chloride solution in the anode sub-cell and water in the cathode sub-cell required by the appellants' claims (answer, page 4). Shiramizu, however, teaches that tap water is "unpreferable or the most deadly foe to a semiconductor device, and hence cannot be used" (col. 5, lines 13-16). The examiner argues that tap water is a deadly foe only because the device being treated is a semiconductor device, and that the appellants' claims do not require that a semiconductor device is treated (answer, pages 4-5). The examiner's rejection, however, is based upon modifying Shiramizu's method, and the examiner has not explained how the applied prior art itself would have led one of ordinary skill in the art to modify Shiramizu's method such that tap water is suitable for use in that method. See *In re Rinehart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976) (In order for a *prima facie* case of obviousness to be established,

the teachings from the prior art itself must appear to have suggested the claimed subject matter to one of ordinary skill in the art).

Regarding the pH requirements in the appellants' claims the examiner argues: "To stop the electrolysis at any point after the feeding of the water containing the electrolyte and this final point of pH and ORP [oxidation reduction potential] would not be patentable modification, because one having ordinary skill in the art would know and could easily optimize based upon routine experimentation at what time to stop the electrolysis and obtain the desired product water" (answer, page 5). Even if one of ordinary skill in the art could easily optimize Shiramizu's method as argued by the examiner, the examiner has not explained how that optimization would have led to the simultaneous recovery of acid water having a pH of about 3 to 4 and weak alkaline water having a pH of from 7 to 9.5. The record indicates that the motivation and enablement for optimizing Shiramizu's method to simultaneously recover acid water and weak alkaline water having those pH values comes from the appellants' disclosure in their specification rather than coming from the applied prior art and

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that, therefore, the examiner used impermissible hindsight when rejecting the claims. See *W.L. Gore & Associates v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984); *In re Rothermel*, 276 F.2d 393, 396, 125 USPQ 328, 331 (CCPA 1960).

For the above reasons, we find that the examiner has not set forth a factual basis which is sufficient to support a conclusion of *prima facie* obviousness of the method recited in any of the appellants' claims.² Accordingly, we reverse the examiner's rejections.

² The examiner does not rely upon Okazaki '856, which is applied only to dependent claims 12 and 15, for a teaching which remedies the above-discussed deficiencies in Shiramizu, They and JP '478.

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DECISION

The rejections under 35 U.S.C. § 103 of claims 1-3, 5-7, 10, 13, 14, 16, 17 and 19 over Shiramizu in view of Theym or JP '478, and claims 12 and 15 over these references further in view of Okazaki, are reversed.

REVERSED

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BRADLEY R. GARRIS)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
TERRY J. OWENS)	
Administrative Patent Judge)	APPEALS AND
)	
)	INTERFERENCES
)	
ROMULO H. DELMENDO)	
Administrative Patent Judge)	

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