

**THIS OPINION WAS NOT WRITTEN FOR PUBLICATION**

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 32

**UNITED STATES PATENT AND TRADEMARK OFFICE**

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Ex parte TAKAYUKI SHIMAMUNE, SHUJI NAKAMATSU,  
ISAO SAWAMOTO and YOSHINORI NISHIKI

**MAILED**

Appeal No. 94-0866  
Application 07/759,975<sup>1</sup>

**JUN 28 1996**

**ON BRIEF**

**PAT & TM OFFICE  
BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Before MEROS, THOMAS and FRANKFORT, Administrative Patent Judges.

MEROS, Administrative Patent Judge.

**DECISION ON APPEAL**

This appeal is from the examiner's rejection of claim 1, the only claim remaining in the application.

The rejected claim is directed to a process for the

<sup>1</sup> Application for patent filed September 17, 1991, which is, according to appellants, a continuation of Application 07/413,495, filed July 27, 1989.

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electrolysis of water to produce ozone-containing oxygen and hydrogen. The claimed process is practiced in an electrolytic cell comprising an anode compartment, a cathode compartment, a diaphragm which is permeable to water separating said compartments, and a conduit connecting the anode and cathode compartments. For a full understanding of the claimed process, claim 1 is reproduced below.

1. A method of water electrolysis using an electrolytic cell comprising an anode compartment, a cathode compartment, a diaphragm separating the anode and cathode compartments, means for recycling electrolyte from the cathode compartment to the anode compartment comprising a conduit connecting the anode and cathode compartments, and a water supply line for the anode compartment, comprising the steps of supplying through said water supply line an electrolyte of pure water to the anode compartment alone and not to the cathode compartment, which water permeates the diaphragm to enter the cathode compartment, electrolyzing the water electrolyte to evolve an ozone-containing oxygen gas in the anode compartment and hydrogen in the cathode compartment, thereby resulting in a net transfer of electrolyte from the anode compartment to the cathode compartment through the diaphragm, maintaining the internal gas pressure of the anode and cathode compartments substantially equal to each other, and recycling the water electrolyte from the cathode compartment to the anode compartment through the conduit such that the liquid level in the anode and cathode compartments is kept substantially the same.

The examiner relies on the following references:

Menth et al (Menth)	4,416,747	Nov. 22, 1983
British Patent (GB '352)	1,190,352	May. 6, 1970

Claim 1 stands rejected under 35 USC § 103 as being unpatentable over (I) GB '352 alone and (II) GB '352 in view of Menth. We reverse.

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It is axiomatic that every feature and limitation positively recited in a claim must be given effect in judging patentability of that claim against the prior art. In re Glass, 474 F.2d 1015, 176 USPQ 529 (CCPA 1973), In re Boe, 505 F.2d 1297, 184 USPQ 38 (CCPA 1974).

The process of electrolyzing water disclosed by GB '352 is practiced in an electrolytic cell of the type shown in either Fig. 1 or Fig. 2 of said reference. In the electrolytic cell shown in Fig. 1, anode chamber 3 and cathode chamber 4 are separated by partition 8. In the electrolytic cell shown in Fig. 2, anode chamber 3' and cathode chamber 4' are separated by wall 8' having a passage 22, which passage is covered with fine-mesh fabric. We find no disclosure or suggestion in GB '352, none pointed out by the examiner, of using a diaphragm through which water from the anode compartment can permeate into the cathode compartment in either of said electrolytic cells as called for in the here claimed process. Thus, said feature of the claimed process is not met or rendered obvious by GB '352.

Moreover, during the electrolysis of water in the electrolytic cell of Fig. 1 of GB '352, the level of water in the anode compartment is forced down by the pressure of the oxygen gas collected in the upper section of said compartment causing the level of water to rise in the cathode compartment and consequently creating substantially unequal levels of water in

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the anode and cathode compartments. Thus, even if the space below partition 8 in the electrolytic cell shown in Fig. 1 of GB '352 is deemed a "conduit" as urged by the examiner, the feature of the claimed process of keeping the levels of the liquid in the anode and cathode compartments substantially the same is neither disclosed nor suggested by GB '352, if in fact that is possible or practical.

During the electrolysis of water in the electrolytic cell shown in Fig. 2 of GB '352, water contained in chamber 17 is passed via pipe 18 into anode chamber 3' and also via pipe 19 into cathode chamber 4'. Thus, the feature of the claimed process of supplying water to the anode compartment and not to the cathode compartment is certainly not met or suggested for the process practiced in the electrolytic cell shown in Fig. 2 of GB '352.

Thus, it is clear that the examiner has failed to establish prima facie obviousness of the claimed process as a whole within the meaning of 35 USC § 103 based on the teachings of GB '352.

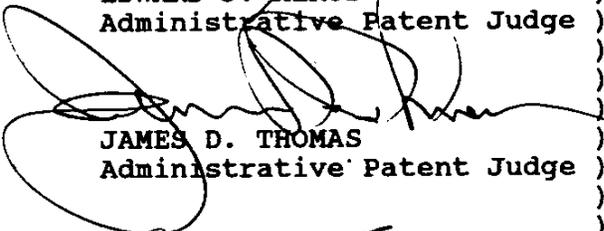
Menth is relied on by the examiner simply to show that it is known in the prior art to produce oxygen and ozone by the electrolysis of water in an electrolytic cell divided by a solid electrolyte into an anode compartment and a cathode compartment wherein oxygen and ozone are produced at the anode and hydrogen

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is produced at the cathode. Menth certainly does not suggest modifications of the electrolysis process disclosed by GB '352 which would cure the deficiencies of said process pointed out above and lead to the presently claimed process. Thus, it is clear that the examiner has also failed to establish prima facie obviousness of the claimed invention as a whole based on the combined teachings of GB '352 and Menth.

Accordingly, the examiner's rejections of claim 1 under 35 USC § 103 are reversed.

REVERSED

  
EDWARD J. MEROS  
Administrative Patent Judge )  
  
JAMES D. THOMAS  
Administrative Patent Judge )  
  
CHARLES E. FRANKFORT  
Administrative Patent Judge )

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