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(19) **United States**(12) **Patent Application Publication****Reichman et al.**(10) **Pub. No.: US 2003/0089620 A1**(43) **Pub. Date: May 15, 2003**(54) **ELECTROLYTIC PRODUCTION OF HYDROGEN****Publication Classification**(76) Inventors: **Benjamin Reichman**, West Bloomfield, MI (US); **William Mays**, Commerce Township, MI (US)(51) **Int. Cl.⁷** **C25B 1/02**(52) **U.S. Cl.** **205/637; 205/639**

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ROCHESTER HILLS, MI 48309 (US)**(57) **ABSTRACT**

Methods for producing hydrogen gas from organic substances. According to the methods, hydrogen is produced from an electrochemical reaction of an organic substance with water or a base. The instant methods permit the production of hydrogen at lower operating voltages or lower operating temperatures relative to water electrolysis. Operable organic substances include alcohols, ethers, carboxylic acids, aldehydes, and ketones. In a preferred embodiment, hydrogen gas is produced from an electrochemical reaction of methanol in the presence of a base such as NaOH or KOH.

(21) Appl. No.: **10/321,935**(22) Filed: **Dec. 17, 2002****Related U.S. Application Data**

(63) Continuation-in-part of application No. 09/929,940, filed on Aug. 15, 2001.

Polarization curves (IR corrected) of water electrolysis in acidic (1M H₂SO₄) solution and of Methanol/H₂O(1M H₂SO₄) solution (50% by volume methanol) using Pt electrode



