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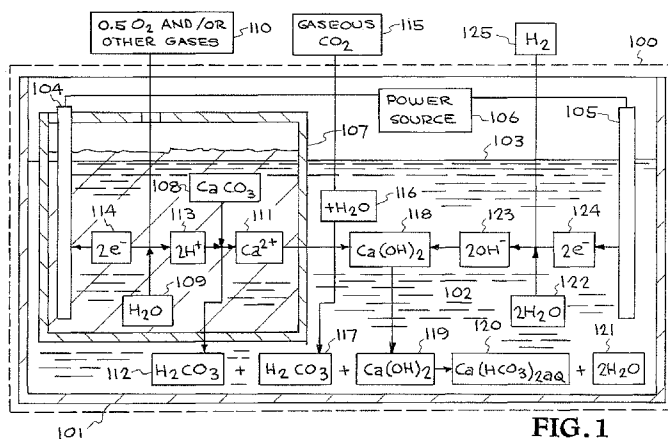


FIG. 1

(57) Abstract: A system is described for forming metal hydroxide utilizing a water electrolysis cell having an acid-producing anode and a hydroxyl-producing cathode immersed in a water solution of sufficient ionic content to allow an electric current to pass between the hydroxyl-producing cathode and the acid-producing anode. A metal carbonate, in particular water-insoluble calcium carbonate or magnesium carbonate, is placed in close proximity to the acid-producing anode. A direct current electrical voltage is provided across the acid-producing anode and the hydroxyl-producing cathode sufficient to generate acid at the acid-producing anode and hydroxyl ions at the hydroxyl-producing cathode. The acid dissolves at least part of the metal carbonate into metal and carbonate ions allowing the metal ions to travel toward the hydroxyl-producing cathode and to combine with the hydroxyl ions to form the metal hydroxide. The carbonate ions travel toward the acid-producing anode and form carbonic acid and/or water and carbon dioxide. Among other uses, the metal hydroxide formed can be employed to absorb acid gases such as carbon dioxide from a gas mixture. The invention can also generate hydrogen and oxidative gases such as oxygen or chlorine.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B01D C25B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005/011770 A1 (KATSUYOSHI TATENUMA [JP] ET AL) 20 January 2005 (2005-01-20) paragraphs [0008] - [0013], [0020] - [0024]; figures 1,2; examples 2,5	1-46
X	GB 205 955 A (PLAUSON S PARENT COMPANY LTD) 1 November 1923 (1923-11-01) the whole document	1-46
A	US 5 776 328 A (TRAINI CARLO [IT] ET AL) 7 July 1998 (1998-07-07) cited in the application column 9, line 6 - column 10, line 10	1-46

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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005011770	A1	20-01-2005	NONE
GB 205955	A	01-11-1923	NONE
US 5776328	A	07-07-1998	NONE