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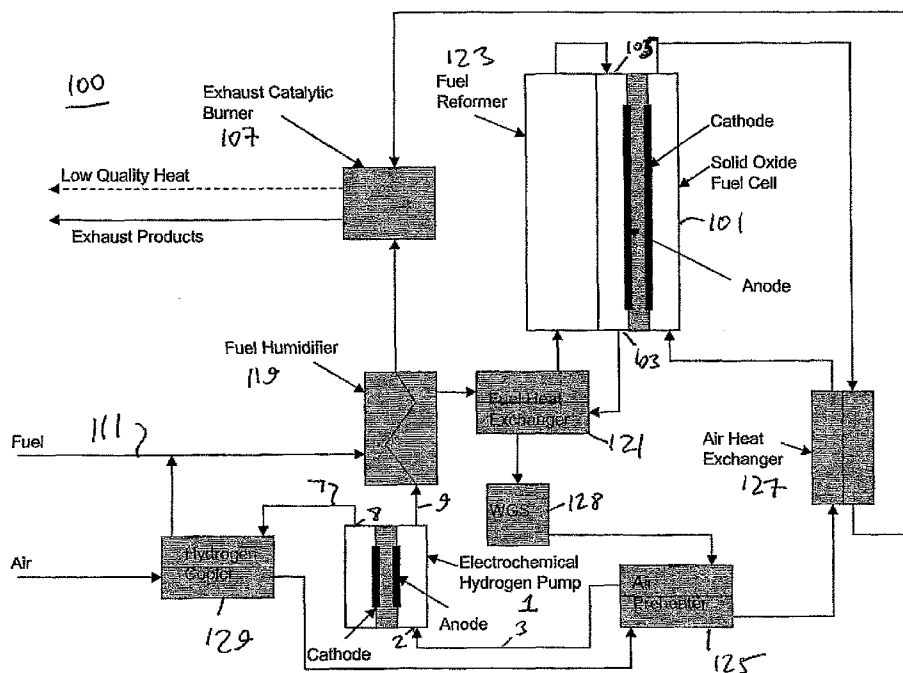
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(54) Title: FUEL CELL SYSTEM WITH ELECTROCHEMICAL ANODE EXHAUST RECYCLING



(57) Abstract: A method of operating a fuel cell system includes providing a fuel inlet stream into a fuel cell stack, operating the fuel cell stack to generate electricity and a hydrogen containing fuel exhaust stream, separating at least a portion of hydrogen contained in the fuel exhaust stream using a high temperature, low hydration ion exchange membrane cell stack, and providing the hydrogen separated from the fuel exhaust stream into the fuel inlet stream.

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<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(8): H01M 8/04 (2007.01) USPC: 429/17 According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) USPC: 429/17 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC: 429/13,17,19,22,26,30; 95/90; 977/948 (text search - terms below) Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PubWEST (PGPB,USPT,USOC,EPAB,JPAB); DialogPro (General Research); Google Scholar Fuel cell, regenerative, inlet, outlet, exhaust, stream, separate, hydrogen, ion, membrane, ionomer, polybenzimidazole, cool, degree		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ----- Y	US 2004/0142215 A1 (BARBIR et al.) 22 July 2004 (22.07.2004), abstract, para [0007]-[0009],[0022], [0026], [0031], [0036] and [0045].	1, 2, 5 and 6 ----- 3, 4 and 7
Y	US 2004/0096713 A1 (BALLANTINE et al.) 20 May 2004 (20.05.2004), abstract, para [0018], [0020]-[0022], [0057], [0058] and [0067].	3 and 7
Y	US 2004/0018144 A1 (BRISCOE) 29 January 2004 (29.01.2004), abstract, para [0001], [0002], [0010]-[0014], [0022]-[0024], [0064] and [0071]-[0076].	4
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>		
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Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774