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(54) Title: HIGH TEMPERATURE PEM FUEL CELL WITH THERMAL MANAGEMENT SYSTEM

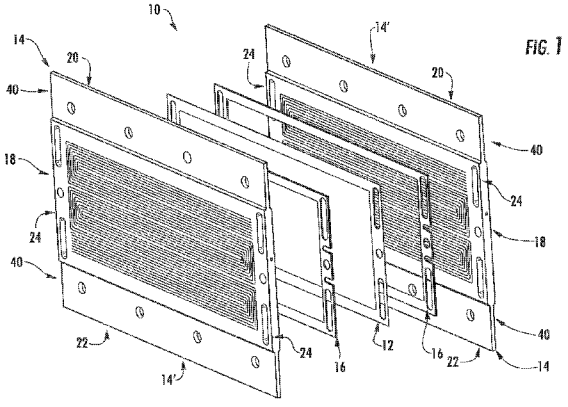

FIG. 1

(57) Abstract: A high temperature proton exchange medium (PEM) fuel stack system includes features for enhancing the thermal management of the fuel cell. The fuel cell can include a plurality of membrane-electrode-assemblies (MEA) separated by bipolar plates. The upper and lower edges of the bipolar plates are configured such that a plurality of fins is formed therein. Air can be passed along the fins in the upper edges of the plates and along the fins in the lower edges in opposite directions. A plurality of channels is formed on one or both surfaces of the bipolar plates. The channels extend along a serpentine path. Except for the end plates, hydrogen is supplied to the channels on one side of each plate and air is supplied to the channels on the channels on the opposite side of each plate. Such features keep the fuel cell within acceptable temperature limits during operation.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

H01M 8/04(2006.01)i, H01M 8/10(2006.01)i, H01M 8/24(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H01M 8/04; H01M 8/02; H01M 8/24; H01M 8/00

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 practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: fuel cell, stack, membrane-electrode-assemblies(MEA), bipolar plate, separator, repeating unit, non-repeating unit, end plate, assembling method, flow channel, cooling fin

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 10-162842 A (MATSUSHITA ELECTRIC WORKS LTD) 19 June 1998 See abstract, figures 2, 4, paragraphs 16-21, 23, 28, claims 1, 7	1-20
A	JP 2006-032007 A (NISSAN MOTOR CO LTD) 02 February 2006 See abstract, figures 1-5, paragraphs 11-21, claims 1-5	1-20
A	US 2006-0105213 A1 (KAZUHIKO OTSUKA) 18 May 2006 See abstract, figures 3-19, paragraphs 52-68, 77-78, claim 37	1-20
A	JP 2000-021434 A (HONDA MOTOR CO LTD) 21 January 2000 See abstract, figures 1-3, 12, paragraphs 15-22, claim 1	1-20
A	US 2005-0255340 A1 (YASUHIRO WATANABE et al.) 17 November 2005 See abstract, figures 3-5B, paragraphs 77-78	1-20

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
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Information on patent family members

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