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(74) Agent: FAIRCHILD, Jeffery, N.; Wood, Phillips, Katz, Clark & Mortimer, Suite 3800, 500 W. Madison Street, Chicago, IL 60661 (US).

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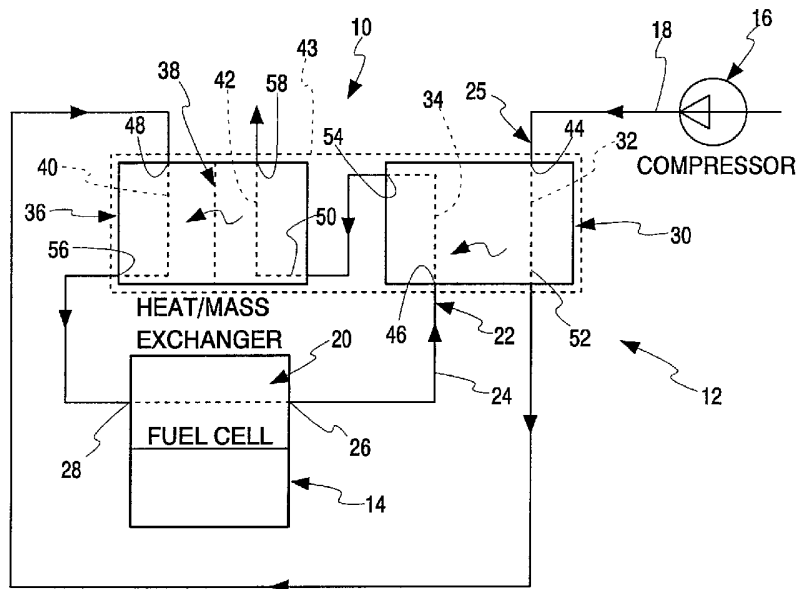
(71) Applicant: MODINE MANUFACTURING COMPANY [US/US]; 1500 DeKoven Avenue, Racine, WI 53403 (US).

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(72) Inventors: VOSS, Mark, G.; 2855 Twin Waters Lane, Franksville, WI 53126 (US). STEVENSON, Joe; 5042 29th Place, Kenosha, WI 53144 (US). CAO, Liping; 2810 Chicory Road, Racine, WI 53403 (US). MEISSNER, Alan, P.; 7803 Briarwood Drive, Franklin, WI 53132 (US).

[Continued on next page]

(54) Title: CATHODE INLET GAS HUMIDIFICATION SYSTEM AND METHOD FOR A FUEL CELL SYSTEM



(57) Abstract: A method and system (10) are provided for humidifying a cathode inlet gas flow (18) in a fuel cell system (12) including a fuel cell (14) and a compressor (16) for supplying the cathode inlet gas flow (18) to a cathode side (20) of the fuel cell (14). According to the method and system (10) heat is transferred from the cathode inlet gas flow (18) to a cathode exhaust flow (24) at a first flow location with respect to the cathode inlet gas flow (18), and water vapor is transferred from the cathode exhaust flow (24) to the cathode inlet gas flow (18) at a downstream flow location from the first flow location with respect to the cathode inlet gas flow (18).

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**Declarations under Rule 4.17:**

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ,

OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

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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)  
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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 2001/010875 A1 (KATAGIRI TOSHIKATSU ET AL) 2 August 2001 (2001-08-02)  paragraphs '0002! - '0004!, '0007!, '0019!, '0076!, '0079! - '0081!, '0090! - '0093!	1,3, 7-13, 16-18, 20-22
Y	figure 13	4-6,14, 19
Y	----- US 2001/004500 A1 (GRASSO ALBERT P ET AL) 21 June 2001 (2001-06-21) paragraphs '0002!, '0005!, '0006!, '0009! - '0013!, '0015!, '0018!, '0022!, '0036! ----- -/--	4,14,19

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Patent family members are listed in annex.

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Name and mailing address of the ISA  
European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer  
  
Kuhn, T

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**C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6 048 383 A (BREault ET AL) 11 April 2000 (2000-04-11) figures 3,5 column 3, paragraph 2 column 3, line 65 - column 4, line 56 column 6, line 20 - line 56 column 7, line 9 - line 61 -----	5,6

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