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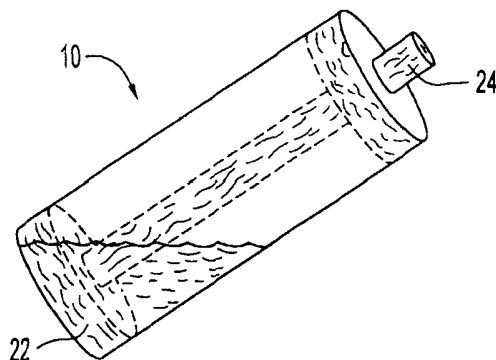
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ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(57) Abstract: A versatile fuel cartridge for storing methanol  
and water, methanol/water mixture or methanol/water mixtures  
of varying concentrations is disclosed. The present invention  
utilizes a filler insert preferably occupying a small portion of the  
volume of the fuel cartridge, so that the fuel cartridge may hold  
more fuel to ensure a long life of the fuel cartridge. The filler  
insert is capable of wicking and transporting the fuel to the MEA.  
Additionally, the filler insert remains in physical contact with  
the fuel in any orientation of the fuel cartridge and at any fuel  
level in the fuel cartridge. The fuel cartridge may have more than  
one chamber, and preferably each chamber contains a different  
concentration of fuel. Optionally, the fuel cartridge may also  
include a pump to initiate fuel flow from the fuel reservoir. The  
pump may also regulate the flow of fuel and importantly to shut  
off the flow of fuel, when necessary.

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**INTERNATIONAL SEARCH REPORT**

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**A. CLASSIFICATION OF SUBJECT MATTER**  
H01M8/04

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**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
H01M

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, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 280 219 A (FOAMEX L.P) 29 January 2003 (2003-01-29)  paragraph '0013! - paragraph '0028! figure 5 figures 13-22	1-6, 9, 10, 12-14, 16, 19-76, 109
X	US 6 326 097 B1 (HOCKADAY ROBERT G) 4 December 2001 (2001-12-04) cited in the application column 10, line 13 - line 21  ----- -/--	1,50

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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- \*G\* document member of the same patent family

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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.
A	US 2002/076599 A1 (NEUTZLER JAY ET AL) 20 June 2002 (2002-06-20) paragraph '0018! - paragraph '0020! figure 4	77-79
A	----- US 5 534 363 A (SPOUSE ET AL) 9 July 1996 (1996-07-09) column 5, line 10 - column 6, line 19 -----	1,50,77

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No  
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
EP 1280219	A	29-01-2003	CA 2390058 A1	28-12-2002
			CN 1402369 A	12-03-2003
			JP 3620652 B2	16-02-2005
			JP 2003109633 A	11-04-2003
			MX PA02006573 A	11-08-2004
			TW 557599 B	11-10-2003
			WO 03003493 A1	09-01-2003
			US 2003008193 A1	09-01-2003
US 6326097	B1	04-12-2001	AU 2050000 A	26-06-2000
			TW 445661 B	11-07-2001
			WO 0035032 A1	15-06-2000
US 2002076599	A1	20-06-2002	AU 3251102 A	24-06-2002
			WO 0249136 A2	20-06-2002
US 5534363	A	09-07-1996	NONE	