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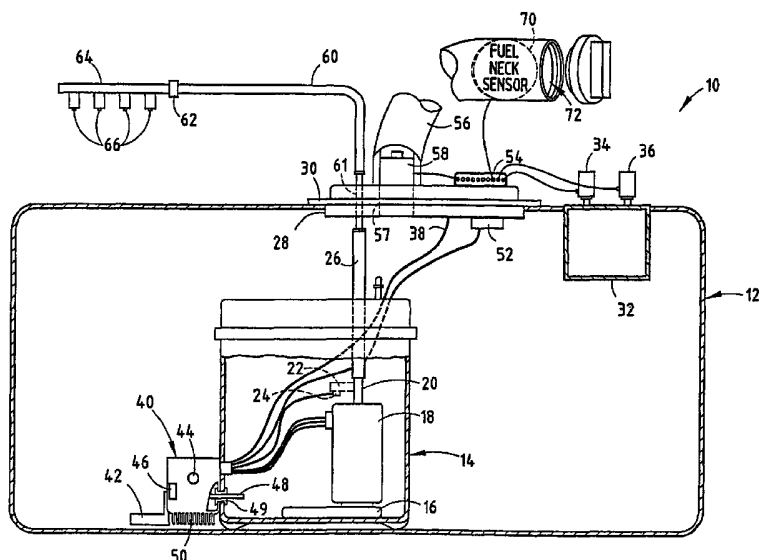
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: VEHICLE FUEL MANAGEMENT SYSTEM



(57) **Abstract:** An integrated fuel management system for controlling the fuel storage and delivery in a vehicle. The fuel management system includes a fuel storage tank for storing fuel in a vehicle, a vapor collection canister located within the fuel storage tank, a vent actuator coupled to the vapor collection canister for venting gas from the canister during a vent operation, and a purge actuator is coupled to the vapor collection canister for purging fuel vapor from the vapor collection canister during a purge operation. A variable speed fuel pump is disposed within the fuel storage tank for delivering fuel to a fuel delivery line for an engine. The fuel management system has a controller provided in a module in communication with the fuel for controlling the amount of fuel pumped with the variable speed fuel pump to deliver fuel to the fuel deliver line and controlling the purge and vent actuators.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/13465

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 F02M25/08 B60K15/03

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)

IPC 7 F02M B60K F02D

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, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 1 031 725 A (WALBRO CORP) 30 August 2000 (2000-08-30) column 4, lines 23-25 column 4, line 43 - line 44 column 6, line 5 - line 11 column 7, line 19 - line 33 column 8, line 38 - line 55 figures	1-8
Y	----- US 6 289 947 B1 (HEIMBRODT KLAUS J ET AL) 18 September 2001 (2001-09-18) column 6, line 11 - line 65; figure 1 ----- -/--	1-8

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
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- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International Application No

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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,P	PATENT ABSTRACTS OF JAPAN vol. 2002, no. 08, 5 August 2002 (2002-08-05) & JP 2002 122053 A (DENSO CORP), 26 April 2002 (2002-04-26) abstract	1
A	----- US 6 302 144 B1 (GRAHAM JOSEPH M ET AL) 16 October 2001 (2001-10-16) abstract; figures	1
A	----- EP 1 155 896 A (BAYERISCHE MOTOREN WERKE AG) 21 November 2001 (2001-11-21) abstract; figure 1	1
A	----- PATENT ABSTRACTS OF JAPAN vol. 1995, no. 01, 28 February 1995 (1995-02-28) & JP 06 280706 A (MAZDA MOTOR CORP), 4 October 1994 (1994-10-04) abstract	1
X	----- US 6 279 541 B1 (DOANE KIRK D ET AL) 28 August 2001 (2001-08-28)	16-19, 21,22, 24-28, 30-32, 34,35
Y	column 3, line 41 - column 4, line 11. column 5, line 45 - column 6, line 67; figures 1,2	20,23, 29,33
Y	----- WO 98/27333 A (SIEMENS AUTOMOTIVE CORP LP) 25 June 1998 (1998-06-25) page 8, line 10 - line 23; figure 2	37-40
Y	----- EP 1 059 430 A (BITRON SPA) 13 December 2000 (2000-12-13) abstract; figure 1	23,33, 37-40
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A	----- US 4 926 829 A (TUCKEY CHARLES H) 22 May 1990 (1990-05-22) cited in the application abstract	16,26,37
A	----- US 6 223 731 B1 (ISOMURA SHIGENORI ET AL) 1 May 2001 (2001-05-01) abstract; figure 1	16,26,37

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/13465

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

As a result of the prior review under R. 40.2(e) PCT,
no additional fees are to be refunded.

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

1-8, 16-40
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☒ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-8

A fuel management system comprising a fuel pump and means for purging a vapor collection canister, and a controller for controlling the fuel pump and said purging means

2. claims: 9-15

A fuel management system comprising a fuel pump and fuel injectors, and a controller for controlling said fuel pump in the proximity of the fuel tank

3. claims: 16-40

A fuel delivery system comprising a variable speed fuel pump and a controller for controlling the speed of said fuel pump

4. claims: 41-45

A vapor fuel management system and method comprising means for purging a vapor collection canister, and a controller for controlling said purging means

5. claim: 46

Method of controlling a fuel fill passage in a vehicle having a vehicle collision detection means

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/13465

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