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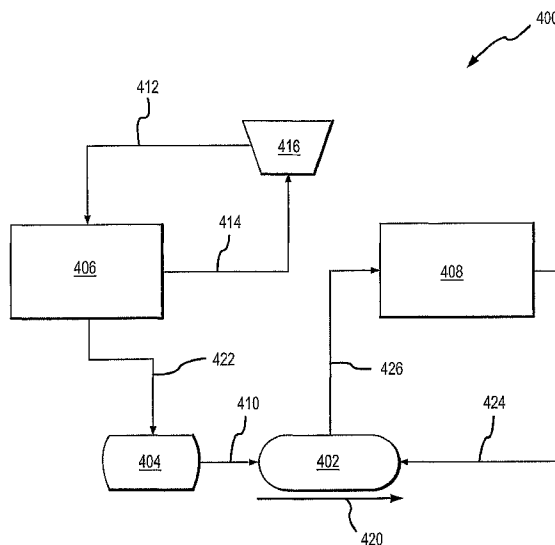
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[Continued on next page]

(54) Title: SORPTION COOLING SYSTEMS, THEIR USE IN AUTOMOTIVE COOLING APPLICATIONS AND METHODS RELATING TO THE SAME



(57) Abstract: A sorption cooling system for providing cooled air to the cabin of a vehicle. The sorption cooling system includes an evaporator, a condenser adapted to fluidly communication with the evaporator, and a plurality of adsorbent beds adapted for fluid communication with the condenser and the evaporator. Each adsorbent bed includes a fluid impermeable casing, desiccant sheets having apertures therethrough, a refrigerant flow path for flowing a refrigerant proximal to a first side of the desiccant sheets, and a coolant flow path for flowing a coolant fluid proximal to a second side of the desiccant sheets. The apertures are a portion of one of the refrigerant and coolant flow paths.

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**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US05/20236

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC: **F25D 17/06**( 2006.01),**23/00**( 2006.01);**F25B 15/00**( 2006.01),**27/00**( 2006.01),**17/00**( 2006.01),**13/00**( 2006.01);**F25C 1/00**( 2006.01);**F24H 3/02**( 2006.01);**F28F 27/02**( 2006.01),**13/12**( 2006.01);**B01D 53/02**( 2006.01)  
 USPC: 62/93,94,112,238.3,271,315,477,480;165/54,62,97,119;96/154  
 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)  
 U.S. : 62/93, 94, 112, 238.3, 271, 315, 477, 480; 165/54, 62, 97, 119; 96/154

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)  
 Conducted electronic search by using search engine EAST.

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4,548,046 A (BRANDON et al) 22 October 1985 (22.10.1985), see the entire document.	1-4, 14-17, 19 and 24
A	US 6,601,404 B1 (RODERICK) 5 August 2003-(05.08.2003), see the entire document.	1-4, 14-17, 19 and 24
A	US 4,582,129 A (YANO et al) 15 April 1986 (15.04.1986), see the entire document.	1-4, 14-17, 19 and 24
A	US 5,619,866 A (SATO et al) 15 April 1997 (15.04.1997), see the entire document.	1-4, 14-17, 19 and 24

Further documents are listed in the continuation of Box C.  See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent published on or after the international filing date	"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
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

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**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US05/20236

**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 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.: 5-13,18 and 20-23  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

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

- 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 additional fees, this Authority did not invite payment of any additional fees.
  - 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.:
  
  - 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 and, where applicable, the payment of a protest fee.
  - The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
  - No protest accompanied the payment of additional search fees.