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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.1 7(H))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.1 7(in))

[Continued on nextpage]

(54) Title: ENERGY STORAGE THERMAL MANAGEMENT SYSTEM USING MULTI-TEMPERATURE PHASE CHANGE MATERIALS

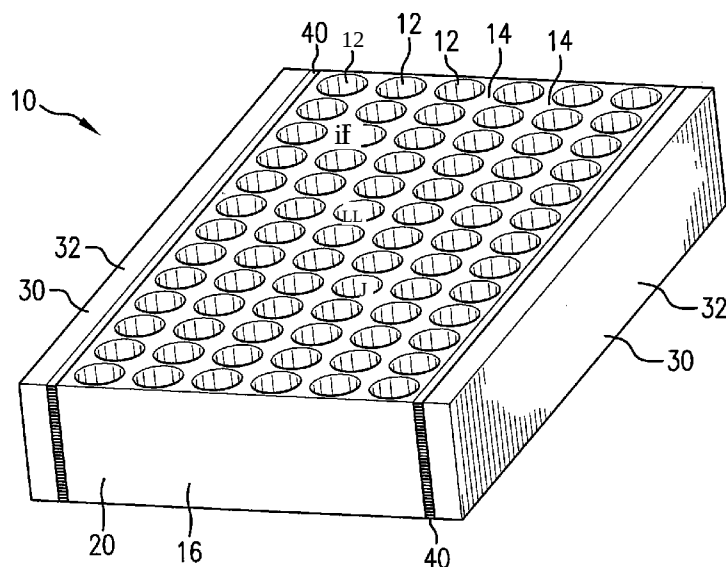


FIG. 1

(57) Abstract: A thermal management method and system for energy storage devices, such as devices including an array of electrochemical cell elements. A first phase change material is in heat-transferring thermal contact with the electrochemical cell elements. A second phase change material in heat-transferring thermal contact with the first phase change material. A heat exchange path can be disposed between the first phase change material and the second phase change material.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/041361**A. CLASSIFICATION OF SUBJECT MATTER*****H01M 10/50(2006.01)i, H01M 10/48(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 10/50; H01M 10/36; H01H 2/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: phase change material, PCM, heat exchange, air, flow, path, channel, fin, battery, cell, pack

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010-0273041 A1 (LAWALL, JENNIFER P. et al.) 28 October 2010	1-5, 11, 18
Y	See paragraphs [0018], [0021H0022], [0027H0031], [0037]; claims 13-20; and figures 4, 6.	6-10, 12-17, 19-20
Y	US 2009-0004556 A1 (AL-HALLAJ, SAID et al.) 1 January 2009	6-10, 14-17, 19
A	See paragraphs [0064], [0074]-[0075]; and figures 11-12	1-5, 11-13, 18, 20
Y	US 5449571 A (LONGARDNER, WILLIAM J. et al.) 12 September 1995	8, 10, 12-13, 16-17
A	See column 6, lines 23-34 and lines 56-66, column 7, lines 34-39; claims 1-2, 6; and figures 1-7.	, 20 1-7, 9, 11, 14-15, 18-19
A	US 2009-0169983 A1 (KUMAR, AJITH KUTTANNAIR et al.) 2 July 2009	1-20
	See paragraphs [0003]-[0004], [0006], [0013], [0030]-[0034]; claims 1-20; and figures 1-2, 4-8.	
A	US 2009-0123815 A1 (ALKEMADE, ULRICH et al.) 14 May 2009	1-20
	See paragraphs [0036]-[0038], [0042]-[0046]; and figure 2.	

☐ 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

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"O" document referring to an oral disclosure, use, exhibition or other means

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"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

"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

"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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