



(43) International Publication Date
6 December 2012 (06.12.2012)

- (51) International Patent Classification:
H01M 2/10 (2006.01) *H01M 2/20* (2006.01)
- (21) International Application Number:
PCT/US2012/040776
- (22) International Filing Date:
4 June 2012 (04.06.2012)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
61/493,275 3 June 2011 (03.06.2011) US
61/543,781 5 October 2011 (05.10.2011) US
- (71) Applicant (for all designated States except US): **ENERDEL, INC.** [US/US]; 8740 Hague Road, Building 7, Indianapolis, IN 46256 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **SILK, Bruce, James** [US/US]; 10748 Canoe Court, Indianapolis, IN 46263 (US). **BUCK, Derrick, Scott** [US/US]; 1932 Huntsville Road, Pendleton, IN 46064 (US). **TOPLE, Thomas** [JP/US]; 136 Derbyshire Drive, Indianapolis, IN 46229 (US). **ALFORD, Stephen** [US/US]; 10272 N. 100e, Alexandria, IN 46011 (US).
- (74) Agent: **MEYERS, Williams, S.**; Faegre Baker Daniels LLP, 300 N. Meridian Street, Suite 2700, Indianapolis, IN 46204 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:

28 February 2013

(54) Title: ENERGY STORAGE SYSTEM

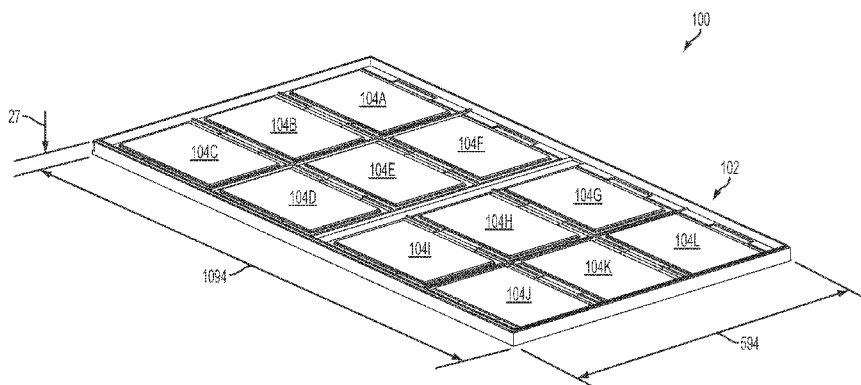


FIG. 1

(57) Abstract: Battery assemblies are disclosed which may include a plurality of battery cells positioned in trays which are stacked. The battery cells of each tray may be electrically connected together. The battery trays may include a battery support which extends under and supports a middle portion of the battery cells of the respective battery tray. The battery support may be a thermal sink for the battery cells.



INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/040776**A. CLASSIFICATION OF SUBJECT MATTER****H01M 2/10(2006.01)i, H01M 2/20(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 2/10; H01M 2/20; H02J 7/00; H01M 2/22; H01M 10/02; H01M 10/06; H01M 6/42

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: battery, cell, electrical connector, tray, multi

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 2011-0104555 A1 (HAN JUNG-YUP et al.) 05 May 2011 See abstract, paragraphs [0028]-[0039], claims 1-17, and figures 1-6.	1,32,56 2-31,33-55,57-62
X A	KR 10-2007-0080871 A (LG CHEM. LTD.) 14 August 2007 See abstract, pages 5-6, claims 1-11, and figures 1-4.	1 2-62
A	JP 07-183022 A (SHIN KOBE ELECTRIC MACH CO., LTD.) 21 July 1995 See abstract, paragraphs [0019]-[0029], claim 1, and figures 1-5.	1-62
A	US 2003-0222618 A1 (AKIHIKO KANOUDA et al.) 04 December 2003 See abstract, paragraphs [0028]-[0031], [0057]-[0058], claim 1, and figures 1-6, 10-12.	1-62

 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

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"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

"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

Date of the actual completion of the international search

28 DECEMBER 2012 (28.12.2012)

Date of mailing of the international search report

02 JANUARY 2013 (02.01.2013)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
189 Cheongsu-ro, Seo-gu, Daejeon Metropolitan
City, 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

NAM, Jeong Kil

Telephone No. 82-42-481-5675



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2012/040776

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2011-0104555 A1	05.05.2011	KR 10-1084213 B1 KR 10-2011-0060480 A	17.11.2011 08.06.2011
KR 10-2007-0080871 A	14.08.2007	None	
JP 07-183022 A	21.07.1995	None	
US 2003-0222618 A1	04.12.2003	DE 60314035 D1 DE 60314035 T2 EP 1355404 A1 EP 1355404 B1 JP 03908076 B2 JP 2003-309935 A TW 1292976 B US 2005-0146223 A1 US 2005-0206242 A1 US 7495415 B2	12.07.2007 24.01.2008 22.10.2003 30.05.2007 25.04.2007 31.10.2003 21.01.2008 07.07.2005 22.09.2005 24.02.2009