



(43) International Publication Date
5 November 2015 (05.11.2015)

- (51) International Patent Classification:
H01M 2/02 (2006.01)
- (21) International Application Number:
PCT/US2015/022226
- (22) International Filing Date:
24 March 2015 (24.03.2015)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
61/981,134 17 April 2014 (17.04.2014) US
- (72) Inventor; and
- (71) Applicant : **GEORGE, Kreigler, III** [US/US]; 8837 Villa La Jolla Drive, #13593, La Jolla, CA 92039 (US).
- (74) Agent: **VIEIRA, Erik**; 8837 Villa La Jolla Drive, #13593, La Jolla, CA 92039 (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, BN, 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, IR, IS, JP, KE, KG, KN, KP, KR,

KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, 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, ST, 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, KM, 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))*

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

23 December 2015

(54) Title: AN ENERGY STORAGE APPARATUS

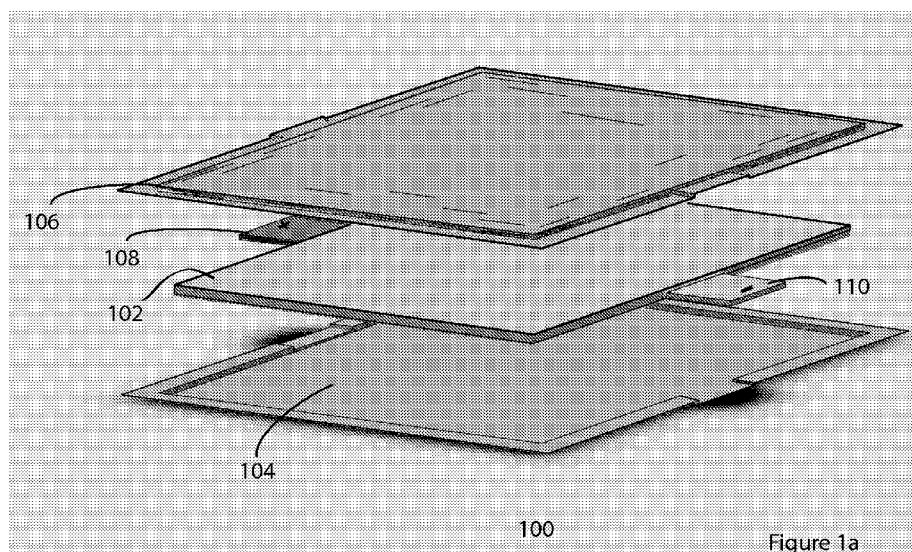


Figure 1a

(57) Abstract: An energy storage apparatus, comprising: an energy cell, having four edges, comprising: a flat rectangular positive electrode layer, having a positive tab, protruding outwardly therefrom; a flat rectangular negative electrode layer, having a negative tab, protruding outwardly therefrom; a flat rectangular separator, wherein the flat rectangular separator is disposed between the flat rectangular positive electrode layer and the flat rectangular negative electrode layer.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2015/022226

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - H01M 2/02 (2015.01)

CPC - H01M 2/02 (2015.04)

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(8) - H01M 2/02, 2/04, 2/06, 2/20 (2015.01)

USPC - 429/127, 163, 178, 179, 185

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
CPC - H01M 2/02, 2/0202, 2/0212, 2/0404, 2/06, 2/08 (2015.04) (keyword delimited)

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

Orbit, Google Patents, Google Scholar

Search terms used: Electrode, rectangular, terminal, electrolyte, pouch, separator, super capacitor, volt, farad, ultrasonic weld, rack, mount, balance circuit

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,296,967 B1 (JACOBS et al) 02 October 2001 (02.10.2001) entire document	1-7
Y		8-13
Y	US 2011/0189533 A1 (REIS et al) 04 August 2011 (04.08.2011) entire document	8-13
A	US 2012/0315521 A1 (NISSELS et al) 13 December 2012 (13.12.2012) entire document	1-13
A	US 2010/0228304 A1 (KRIKSUNOV et al) 09 September 2010 (09.09.2010) entire document	1-13

☐ Further documents are listed in the continuation of Box C.

* 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 another 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

26 May 2015

Date of mailing of the international search report

19 JUN 2015

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-8300

Authorized officer:

Blaine R. Copenheaver

PCT Helpdesk: 571-272-4300

PCT OSP: 571-272-7774