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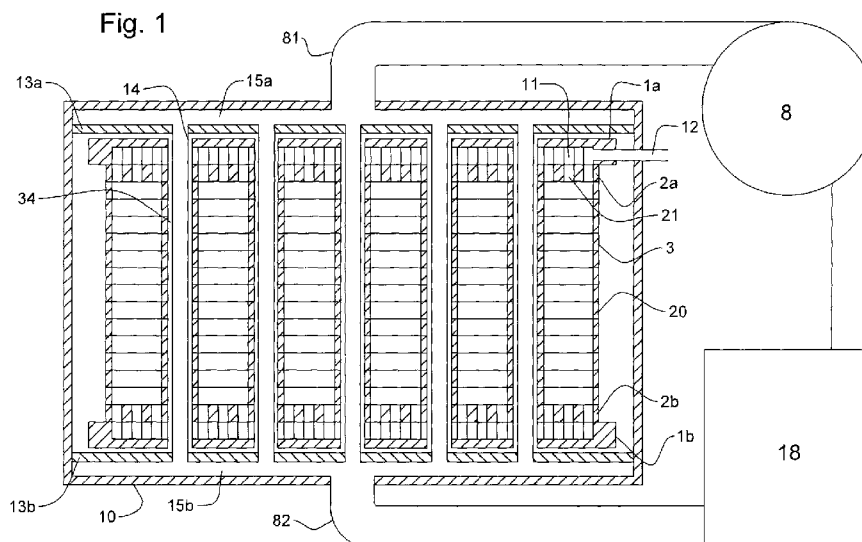
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Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

[Continued on next page]

(54) Title: LITHIUM ACCUMULATOR



(57) Abstract: A lithium accumulator containing positive and negative electrodes (4a, 4b) with a minimum thickness of 0.5 mm, separated by separators (5), where each electrode is deposited into a hole (31) in a frame, as a part of a set of frames arranged in a stack between marginal covers (1a, 1b), with electrical insulation (55) between the frames of opposite electrodes and additional current collectors (51,53) between identical electrodes, wherein each frame (3) comprises at least one channel (32) for passage of a heat exchange media and the channels (32) of the individual frames (3) are interconnected. Liquid accumulator electrolyte may be used as a heat exchange media.



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INTERNATIONAL SEARCH REPORT

International application No PCT/IB2011/054109

A. CLASSIFICATION OF SUBJECT MATTER				
INV. H01M10/02	H01M10/04	H01M10/052		
H01M10/42	H01M10/50	H01M2/40		
ADD. 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				
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				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
Y	WO 2010/031363 A1 (HE3DA S R O [CZ]; PROCHAZKA JAN JR [CZ]; PROCHAZKA JAN [CZ]) 25 March 2010 (2010-03-25) cited in the application claims 1,25; figure 17; example 7 -----	1,2,5,6, 15,17		
Y	WO 2010/005954 A2 (ENERVAULT CORP [US]; HORNE CRAIG RICHARD [US]; KINOSHITA KIM [US]; HIC) 14 January 2010 (2010-01-14) paragraphs [0040] - [0047]; figures 3A, 3B -----	1,2,5,6, 15,17		
A	EP 1 577 966 A2 (FUJI HEAVY IND LTD [JP]) 21 September 2005 (2005-09-21) paragraphs [0012], [0032] - [0034]; claims 1,5; figures 2,4 -----	1-6, 15-17		
A,P	EP 2 284 425 A1 (FREUDENBERG CARL KG [DE]) 16 February 2011 (2011-02-16) paragraph [0077]; figure 10 -----	1-6, 15-17		
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.				
* Special categories of cited documents : <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </td> <td style="width: 50%; border: none; vertical-align: top;"> <p>"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</p> <p>"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</p> <p>"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.</p> <p>"&" document member of the same patent family</p> </td> </tr> </table>			<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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.</p> <p>"&" document member of the same patent family</p>
<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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.</p> <p>"&" document member of the same patent family</p>			
Date of the actual completion of the international search	Date of mailing of the international search report			
18 January 2012	18/04/2012			
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Schwake, Andree			

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2011/054109

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.:
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:

see additional sheet

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 fees, this Authority did not invite payment of 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.:

2-6, 15-17(completely); 1(partially)

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 2-6, 15-17(completely); 1(partially)

A lithium accumulator containing positive and negative electrodes with a minimum thickness of 0.5 mm, separated by separators, where each electrode is placed into a hole in a frame, as a part of a set of frames arranged in a stack between marginal covers, with electrical insulation between the frames of electrodes opposite polarity and additional current collectors for identical electrodes, wherein each frame (3) comprises at least one channel (32) for passage of a heat exchange medium and the channels (32) in the individual frames (3) are interconnected characterised in that the covers (1a, 1b) are provided with a system of interconnected grooves (11) on the inner side (3), opposite the holes (31), where at least one cover (1a) is connected to the electrolyte inlet (12).

2. claims: 7-12(completely); 1(partially)

A lithium accumulator containing positive and negative electrodes with a minimum thickness of 0.5 mm, separated by separators, where each electrode is placed into a hole in a frame, as a part of a set of frames arranged in a stack between marginal covers, with electrical insulation between the frames of electrodes opposite polarity and additional current collectors for identical electrodes, wherein each frame (3) comprises at least one channel (32) for passage of a heat exchange medium and the channels (32) in the individual frames (3) are interconnected characterised in that the heat exchange media is electrolyte.

3. claims: 13, 14(completely); 1(partially)

A lithium accumulator containing positive and negative electrodes with a minimum thickness of 0.5 mm, separated by separators, where each electrode is placed into a hole in a frame, as a part of a set of frames arranged in a stack between marginal covers, with electrical insulation between the frames of electrodes opposite polarity and additional current collectors for identical electrodes, wherein each frame (3) comprises at least one channel (32) for passage of a heat exchange medium and the channels (32) in the individual frames (3) are interconnected characterised in that the frames (3) are provided with electrical contacts (57, 58) and electrically conductive foils (51, 53) are inserted between the frames (3) of identical polarity, whereby the frames (3) with the contacts (57, 58) of identical electrodes form accumulator poles (52, 54).

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/IB2011/054109

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