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(54) **Title:** ELECTRIC VEHICLE BATTERY CELL WITH SENSE TABS

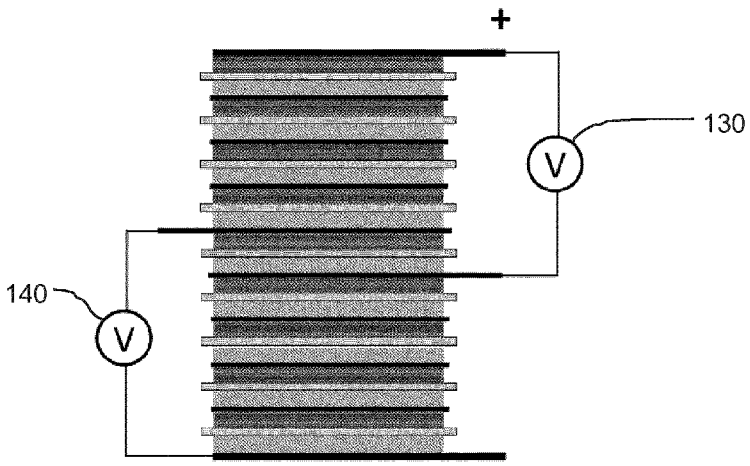


Fig. 3a

(57) **Abstract:** A battery includes a first battery cell including an endplate current collector cathode, an endplate current collector anode, a plurality of battery cell components between the endplate current collector cathode and the endplate current collector anode, each battery cell component including a cathode, a separator, an anode and a bipolar current collector, and at least one sense tab connected to and extending from one of the bipolar current collectors between the endplate current collector cathode and the endplate current collector anode. A second battery cell is connected in parallel to the first battery cell via the endplate current collector cathode and the endplate current collector anode. A voltmeter is connected between a first sense tab and one of the following: the endplate current collector cathode, endplate current collector anode or a second sense tab of the at least one sense tabs, the voltmeter being electrically isolated from at least one of the endplate current collector cathodes and the endplate current collector anodes via at least one battery cell component of the first battery cell and measuring at least two of the battery cell components. A battery cell, a method, an electric vehicle battery and an electric vehicle are also provided.

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[Continued on next page]

TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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))*

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INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. H01M2/10 H01M10/04 H01M10/0585 H01M10/48
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 practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 487 034 A2 (NISSAN MOTOR [JP]) 15 December 2004 (2004-12-15) cited in the application figures 1, 6 paragraph [0020] - paragraph [0031] paragraph [0162] - paragraph [0171] -----	1-11, 17-20
A	KR 2012 0025412 A (NISSAN MOTOR [JP]) 15 March 2012 (2012-03-15) figures 1-3 -----	1-11, 17-20
A	US 2013/157092 A1 (SUZUKI NAOTO [JP] ET AL) 20 June 2013 (2013-06-20) abstract figure 1 -----	1-11, 17-20
	-/--	

[X] Further documents are listed in the continuation of Box C.

[X] 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

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"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

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Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Scheid, Michael

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Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2019/059405

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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A	JP 2008 117626 A (NISSAN MOTOR) 22 May 2008 (2008-05-22) abstract figures 1,2	1-11, 17-20
A	JP 2004 355953 A (NISSAN MOTOR) 16 December 2004 (2004-12-16) abstract figures 4,5	1-11, 17-20
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A	US 2013/127422 A1 (KATO YUKINARI [JP] ET AL) 23 May 2013 (2013-05-23) figures 1-3 paragraph [0019] - paragraph [0043]	12-16
A	US 2017/084963 A1 (PARK SANG MOK [KR]) 23 March 2017 (2017-03-23) paragraph [0031] - paragraph [0049] figures 1-7	12-16
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INTERNATIONAL SEARCH REPORT

International application No.
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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.:

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: 1-11, 17-20

   Battery

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2. claims: 12-16

   Battery cell

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2019/059405

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