

PATENT COOPERATION TREATY

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INTERNATIONAL SEARCHING AUTHORITY

PCT

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**
(PCT Rule 43*bis*.1)

To:

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Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2019/059691

International filing date (day/month/year)
04.11.2019

Priority date (day/month/year)
05.11.2018

International Patent Classification (IPC) or both national classification and IPC
INV. H01M2/26 H01M10/04 H01M10/0525 H01M10/28

Applicant
TESLA, INC.

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application


2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:



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Date of completion of this opinion

see form
PCT/ISA/210

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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - the international application in the language in which it was filed.
 - a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
 - a. forming part of the international application as filed:
 - in the form of an Annex C/ST.25 text file.
 - on paper or in the form of an image file.
 - b. furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. furnished subsequent to the international filing date for the purposes of international search only:
 - in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).
 - on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).
4. In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>9, 17, 18, 25</u>
	No: Claims	<u>1-8, 10-16, 19-24, 26, 27</u>
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-27</u>
Industrial applicability (IA)	Yes: Claims	<u>1-27</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1 Reference is made to the following documents:

D1 US 2005/277019 A1 (RILEY GILBERT N JR [US] ET AL) 15
December 2005 (2005-12-15)

D2 US 2013/048340 A1 (BANDO TOSHINORI [JP] ET AL) 28
February 2013 (2013-02-28)

D3 US 2009/029240 A1 (GARDNER WILLIAM H [US] ET AL) 29
January 2009 (2009-01-29)

2 **Novelty**

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of **claims 1-8, 10-16, 19-24, and 26-27** is not new in the sense of Article 33(2) PCT.

2.1 The clarity objection notwithstanding, the broadly formulated **claim 1** cannot be considered as novel, as it can represent any jelly-roll type electrode assembly, as the first and second substrate can be considered as a current collector, which is a conductive material, of first and second electrode of the electrode assembly separated with an inner separator. See for example **D1** (paragraphs 0008-0009, 0030, fig. 4). Furthermore, the claim at present, can also be understood that the conducting material is included in the first and or second coating, for example, as a mixture comprised of an electrode active material.

2.2 Based on the above, **claims 2, 3, 10** as well as the method **claims 19, 22** are also not novel in light of any jelly-roll electrode assembly.

2.3 **D1** also discloses the subject matter of **claims 8 and 9** (see, for example fig. 5).

2.4 **D1** also discloses the subject matter of **claims 11-16**, as it discloses an energy storage device comprising the cell comprised of a wound electrode assembly, where a substrate has a conductive material along the edge of the width of the substrate (fig. 4, ref. 214 and 212); and a can comprising a first end and a second end, both end being open ends formed by a can wall (ref. 120), wherein the first end comprises a first cap, referred to as "cover" (paragraphs

- 0043-0045, fig. 7, ref. 310, 304, 306, 308) comprising a contact surface (ref. 304) being in electrical contact with the conductive material, and a second endcap, referred to as "anode endcap" (ref. 222).
- 2.5 Based on the latest, the subject matter of the method **claims 26 and 27** is also known **from D1**.
- 2.6 Based on the broadly defined claim 1, the conductive material comprised in the substrate, can be also understood as an electric tab. Therefore, the subject matter of **claim 8** is also known from **D1**.
- 2.7 **D2** is also closely related to the present invention and discloses the subject matter of **claims 1-3 and 10** (paragraphs 0008, 0025, 99-100, fig. 2a,b, ref. 21 and 22), where the electrode plate (fig. 2a,b, ref. 22) made of aluminium is the conducting material at the edge of the electrode width of claims 1 to 3.
- 2.8 D2 further discloses that the electrode assembly is wound around central axis (paragraph 0086-0088), therefore the subject matter of **claims 4 and 5** is also known from **D2**.
- 2.9 The subject matter of **claims 6 and 7** is also known from **D2**, which discloses an insulating material region, referred to as "short-circuiting prevention layer", adjacent to the conducting material area and the coating area (paragraphs 0121-0124, fig. 3a, b; and 0133, fig. 4a, b, ref. 24).
- 2.10 **D2** also discloses the subject matter of **claims 11-13** (paragraphs 0080-0081, fig. 12, ref. 1, 2, 5; and fig. 11, ref. 12, 4a).
- 2.11 As a consequence of the above, the subject matter of **claims 19-24** is also known from **D2**.
- 3 **Inventive step**
- The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of **claims 9, 17-18, and 25** does not involve an inventive step in the sense of Article 33(3) PCT.
- 4 D2 is regarded as being the prior art closest to the subject-matter of the present invention. D2 does not disclose the subject matter of claims 9, 17-18 and 24. However, none of the claims appear to comprise an inventive step for the reasons given below:
- 4.1 The subject matter of claims 17 and 18 does not appear to further specify the invention.

4.2 The difference of claims 9 and 25 from the closest prior art is that one of the electrodes/ comprises an electrode tab protruding from the mid-plane of the substrate. The introduction of this feature however appears to represent only a one of the optional/alternative embodiments related to the specificity of the battery comprising the electrode assembly of the present invention, which does not seem to provide any particular technical effect in light of the available prior art.

Furthermore, such arrangement of electrode tabs protruding from the mid-plane of an electrode, applied in order to minimize ohmic resistance, is well known from the prior art. See for example **D3** (paragraphs 0059 and 0056-0058, fig. 6a, b).

Re Item VIII

Certain observations on the international application (Clarity)

The application does not meet the requirements of Article 6 PCT, because the subject matter of claims 1-27 is not clear.

- 4.3 The subject matter of claim 1 is not clear because the feature "first substrate" is well defined. The claim specifies that the first substrate comprises second portion comprising a conductive material. This suggests that the "first substrate" should also comprise a first portion. This feature however is not provided in the claim. This ambiguity should be clarified, keeping in mind that, for the clarity of the scope of the invention, each of the portions should be well defined in the independent claim/s.
- 4.4 The term "width" used in claims 1 and 6 is not well defined, as with this term one can understand either of the two, width or length, dimensions of the electrode assembly. The relative dimensional terms, width and length should be further specified.
- 4.5 The expression "successive manner" used in claim 22 has no particular technical meaning and is omitted from the evaluation of the claim.
- 4.6 It appears that the method claim 19 is directly related to the cell comprising an electrode assembly of claim 1. No reference however to claim 1 is provided in claim 19, rendering the scope of the present invention unclear.

In summary, in light of the clarity issues as well as the available prior art, it is not clear what the scope of the present invention is meant to be. The applicant is invited to file new claims taking care that all the amendments have basis in the description and that the independent claims include all features that are essential to the definition of the invention.