PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 001260PCT	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/US01/29448	International filing date *(day/month/year)* 20 September 2001 (20.09.2001)	Priority date *(day/month/year)* 22 September 2000 (22.09.2000)
International Patent Classification (IPC) or national classification and IPC IPC(7): H01M 2/14, 10/14, 10/18 and US Cl.: 429/ 51, 130, 143		
Applicant POWERCELL CORPORATION		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 0 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of report with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
22 April 2002 (22.04.2002)	16 March 2003 (16.03.2003)
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer Patrick Ryan Telephone No. 703-308-1193

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US01/29448

I. Basis of the report

1. With regard to the **elements** of the international application:*

☒ the international application as originally filed.

☒ the description:
pages 1-10 as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

☒ the claims:
pages 11-15, as originally filed
pages NONE, as amended (together with any statement) under Article 19
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

☒ the drawings:
pages 1-2, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

☐ the sequence listing part of the description:
pages NONE, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination(under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in printed form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages NONE

☐ the claims, Nos. NONE

☐ the drawings, sheets/~~fig~~ NONE

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*
** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US01/29448

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. STATEMENT

Novelty (N)	Claims 7, 11-12, 25-26, 29	YES
	Claims 1-6, 8-10, 13-24, 2-28	NO
Inventive Step (IS)	Claims NONE	YES
	Claims 1-29	NO
Industrial Applicability (IA)	Claims 1-29	YES
	Claims NONE	NO

2. CITATIONS AND EXPLANATIONS

1. Claims 1-6, 8-10, 13-24 and 27-28 lack novelty under PCT Article 33(2) as being anticipated by Tomazic (EP 225,315.)

Tomazic (EP 225,315) teaches an electrochemical cell comprising a bipolar electrode plate having a first and second side with non-conducting spacer members affixed to both sides of the plate (see the claims and the figures.) The bipolar plate includes an anode and cathode applied to each side of a polypropylene substrate (page 1.) The figures show the spacing members to be equal in height and substantially parallel with linear and sinusoidal configurations. The spacing member is interpreted to have a protrusion as indicated in figure 3. The reference teaches that the material should have recesses on the surface to avoid separation of the active material (see page 4 of the translation, lines 17-25.) The material has a non-conductive border, which allows for the formation of electrolyte flow channels on each side of the plate (see page 1 of the translation, lines 1-15.) Thus, the claims are anticipated.

2. Claim 7 lacks an inventive step under PCT Article 33(3) as being obvious over Tomazic (EP 225,315) in view of Linden (The Handbook of Batteries.)

The teachings of Tomazic (EP 225,315) have been presented in the previous sections. Tomazic (EP 225,315) does not teach the non-conducting spacer members to be not equal in height to the non-conducting spacer members on the opposite side of the bipolar plate. It would be obvious to one of ordinary skill in the art at the time the invention was made to adjust the heights of the separators in order to increase or decrease the amount of electrolyte flow. It is well known in the art that the amount of electrolyte to be reacted at the electrodes will determine the utilization of the battery (see Linden page 37.6, 3rd full paragraph.) Thus, the amount of electrolyte desired at the electrode interface depends on the application. One of ordinary skill in the art would have the knowledge to determine the amount of electrolyte necessary at the electrode interface and, therefore, would adjust the length of the separator in Tomazic accordingly.

3. Claims 11-12, 25-26 and 29 lack an inventive step under PCT Article 33(3) as being obvious over Tomazic (EP 225,315) in view of Hodgetts (US 5,346,786.)

The teachings of Tomazic (EP 225,315) have been presented in the previous sections. Tomazic (EP 225,315) does not teach the non-conducting spacer member to comprise a means for enhancing alignment. Hodgetts (US 5,346,786), however, teaches a bipolar cell stack wherein the bipolar plates include a series of raised ribs and corresponding indentations on adjacent cells in order to align the cells in a desired position. It would be obvious to one of ordinary skill in the art at the time the invention was made to include a recessed means on a plate in order to align the adjacent plates of the stack in a proper configuration. One of ordinary skill in the art would recognize that the teachings of Hodgetts (US 5,346,786) show a desire and a means for aligning bipolar cell separating plates using protrusions and recesses. It would be obvious to combine the teachings of the references to use the separating posts of Tomazic (EP 225,315) as the protrusions of Hodgetts (US 5,346,786.) The method of claim 29 is obvious by the same reasoning.

---------- NEW CITATIONS ----------

Linden, D.; "The Handbook of Batteries," McGraw Hill, New York, 1995.