

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

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| Applicant's or agent's file reference PALGE09347 | FOR FURTHER ACTION | | See item 4 below |
| International application No. PCT/KR2009/003953 | International filing date (<i>day/month/year</i>) 17 July 2009 (17.07.2009) | Priority date (<i>day/month/year</i>) | |
| International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237 | | | |
| Applicant LG ELECTRONICS INC. | | | |

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|---|-------------------------------------|---|---------------------|--------------------------|------------|----------|-------------------------------------|-------------|--|--------------------------|------------|----------------------------|-------------------------------------|-----------|---|--------------------------|------------|-------------------------|--------------------------|-------------|--|-------------------------------------|--------------|---|
| <p>1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p>In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.</p> | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>3. This report contains indications relating to the following items:</p> <table> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> <p>4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).</p> | <input checked="" type="checkbox"/> | Box No. I | Basis of the report | <input type="checkbox"/> | Box No. II | Priority | <input checked="" type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | <input type="checkbox"/> | Box No. IV | Lack of unity of invention | <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | <input type="checkbox"/> | Box No. VI | Certain documents cited | <input type="checkbox"/> | Box No. VII | Certain defects in the international application | <input checked="" type="checkbox"/> | Box No. VIII | Certain observations on the international application |
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. II | Priority | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VI | Certain documents cited | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | Box No. VIII | Certain observations on the international application | | | | | | | | | | | | | | | | | | | | | | |

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| <p align="center">The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No. +41 22 338 82 70</p> | <p>Date of issuance of this report 17 January 2012 (17.01.2012)</p> |
| | <p>Authorized officer</p> <p align="center">Philippe Bécamel</p> <p>e-mail: pt01.pct@wipo.int</p> |

PATENT COOPERATION TREATY

To:

PARK, Jang, Won
 Jewoo Bldg. 5th Floor
 200 Nonhyun-Dong, Kangnam-Ku
 Seoul 135-010
 Republic of Korea

PCT

**WRITTEN OPINION OF THE
 INTERNATIONAL SEARCHING AUTHORITY**

(PCT Rule 43bis.1)

Date of mailing 08 April 2011 (08.04.2011)
 (day/month/year)

Applicant's or agent's file reference
PALGE09347

FOR FURTHER ACTION
 See paragraph 2 below

International application No.
PCT/KR 2009/003953

International filing date (day/month/year)
17 July 2009 (17.07.2009)

Priority Date (day/month/year)

International Patent Classification (IPC) or both national classification and IPC
F04B 49/12 (2006.01); F04B 49/16 (2006.01); F04B 49/24 (2006.01)

Applicant

LG ELECTRONICS INC.

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

- Cont. No. I Basis of the opinion
- Cont. No. II Priority
- Cont. No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Cont. No. IV Lack of unity of invention
- Cont. 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
- Cont. No. VI Certain documents cited
- Cont. No. VII Certain defects in the international application
- Cont. No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will 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 66.1bis(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.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ AT
Austrian Patent Office
 Dresdner Straße 87, A-1200 Vienna
 Facsimile No. +43 / 1 / 534 24 / 535

Authorized officer
HÖRZER K.
 Telephone No. +43 / 1 / 534 24 / 359

Continuation 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.

Continuation No. III:

Non-establishment of opinion with regard to novelty, NonInventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an NonInventive step (to be non obvious), or to be industrially applicable have not been examined in respect of the said claims Nos. 4 because the description, claims or drawings (particular elements indicated below) or said claims Nos. 4 are so unclear that no meaningful opinion could be formed (specify):

Said claim 4 contains just features of a method, although the beginning of claim 4 refers to a device.;

no international search report has been established for said claims Nos. 4.;

Continuation 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) | Claims 1-3,5-17 | YES |
| | Claims | NO |
| Inventive step (IS) | Claims 2,10-17 | YES |
| | Claims 1,3,5-9 | NO |
| Industrial applicability (IA) | Claims 1-3,5-17 | YES |
| | Claims | NO |

2. Citations and explanations:

The retrieved document WO 2008/096999 A1 discloses a reciprocating compressor including a hermetic container having a hermetic inner space, a driving motor installed in the inner space of the hermetic container and having a crankshaft, a connecting rod coupled to an eccentric portion of the crankshaft and configured to convert a rotary motion of the driving motor into a linear motion, a piston

coupled to the connecting rod and reciprocated within a compression space of a cylinder to compress a refrigerant, and a sleeve coupled between the crankshaft and the connecting rod.

The document WO 2003/064857 A2 pertains to a reciprocating compressor having a hermetic container having a hermetic inner space, a driving motor installed in the inner space of the hermetic container and having a crankshaft, a connecting rod coupled to the crankshaft and configured to convert a rotary motion of the driving motor into a linear motion, a piston coupled to the connecting rod and reciprocated within a compression space of a cylinder to compress a refrigerant, wherein the cylinder is provided with at least one exhaust hole configured to allow a refrigerant compressed in the compression space of the cylinder to be partially leaked into the inner space of the hermetic container, the cylinder further provided with a mode switching unit configured to selectively open and close the exhaust hole.

The combination of the documents WO 2008/096999 A1 and WO 2003/064857 A2 arrives at a reciprocating compressor according to the independent claim 1. Further, the combination of the documents WO 2008/096999 A1 and WO 2003/064857 A2 yields devices according to dependent claims 3, and 5 to 9, like the driving motor being implemented as a bi-directionally motor (feature of the dependent claim 3), the piston having an upper dead point approximately same in the saving mode and the power mode (feature of the dependent claim 6), or a latching pin coupled to the eccentric portion of the crankshaft in a radial direction, and a pin stopper disposed at the eccentric sleeve and configured to lock or release the latching pin according to the rotation direction of the crankshaft (features of the dependent claim 9). According to the aforementioned, the independent claim 1 and the dependent claims 3 and 5 to 9 are new, but do not involve an inventive step.

The industrial applicability is given for the claims 1-3 and 5-17.

Continuation 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:

In order to improve the readability of the claims, the claims should contain the reference numerals of the technical features put in parentheses.
