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(71) Applicant (for all designated States except US): EVA-TRAN LLC [US/US]; 925 Fairview Road, Wytheville, VA 24382 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): PAPARO, Vincenzo, I. [US/US]; 480 Fairview Drive, Daleville, VA 24083 (US). ATKINS, Robert [US/US]; 675 Pine Ridge Road, Wytheville, VA 24382 (US).

(74) Agent: LAUBSCHER, Lawrence, E., Jr.; Leading Edge Law Group PLC, P.O. Box 1996, Richmond, VA 23218 (US).

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Declarations under Rule 4.17:

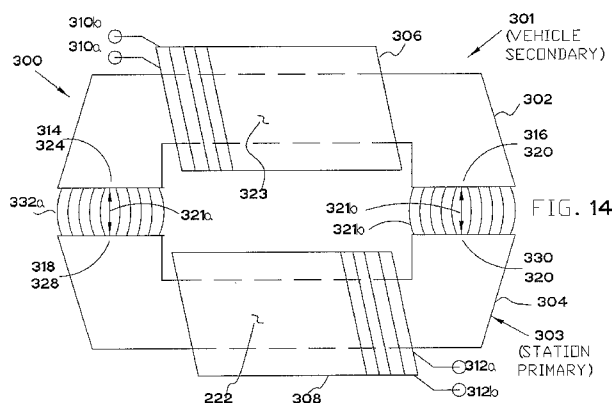
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

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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(54) Title: METHOD AND APPARATUS FOR INDUCTIVELY TRANSFERRING AC POWER BETWEEN A CHARGING UNIT AND A VEHICLE



(57) Abstract: A method and apparatus for hands free inductive charging of batteries for an electric vehicle is characterized by the use of a transformer having a primary coil connected with a charging station and a secondary coil connected with a vehicle. More particularly, the when the vehicle is parked adjacent to the charging station, the primary coil is displaced via a self alignment mechanism to position the primary coil adjacent to the secondary coil to maximize the inductive transfer of charging current to the secondary coil. The self alignment mechanism preferably utilizes feedback signals from the secondary coil to automatically displace the primary coil in three directions to position the primary coil for maximum efficiency of the transformer.



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A. CLASSIFICATION OF SUBJECT MATTER**H02J 17/00(2006.01)i, H02J 7/00(2006.01)i, B60L 11/18(2006.01)i**

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)

H02J 17/00; B60L 11/18; H04B 5/00; H01F 21/06; H01F 37/00; B60K 21/00; H02J 7/00; B60L 900

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: "Inductive Transmission", "Power", "Transformer", "Charger", "EV(Electric Vehicles)", "Non-contact"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 06-245326 A (Fujitsu Denso Ltd) 02 Sep. 1994 see the abstract, claims 1-2, figures 1-3	1,4-5, 14, 16-27
X	US 2007-0252441 A1 (Hokushin Denki Co Ltd) 01 Nov. 2007 see the abstract, claims 1-8, figures 1-6	1,4-5, 14, 16-27
X	US 7323964 B1 (National Central Univ) 29 Jan. 2008 see the abstract, claims 1-20, figures 1-2	1,4-5, 14, 16-27
X	US 6848547 B1 (Kabushiki Kaisha Toyoda Jidoshokki Seisakusho) 01 Feb. 2005 see the abstract, claims 1-18, figures 1-5	1,4-5, 14, 16-27
A	US 5982139 A (Ronald J. Parise) 09 Nov. 1999 see the abstract, claims 1-13, figures 1-10	1-30

 Further documents are listed in the continuation of Box C. 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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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"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

"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

"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

"&" document member of the same patent family

Date of the actual completion of the international search

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Korean Intellectual Property Office
Government Complex-Daejeon, 189 Cheongsu-ro,
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Authorized officer

BAE, Jin Yong

Telephone No. 82-42-481-8503



INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 06-245326 A	02.09.1994	JP 2879285 B2	05.04.1999
US 2007-0252441 A1	01.11.2007	US 7782633 B2 WO 2006-022365 A1	24.08.2010 02.03.2006
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US 5982139 A	09.11.1999	US 6114834 A US 6792259 B1 US 7068991 B2 WO 98-50996 A2 WO 98-50996 A3	05.09.2000 14.09.2004 27.06.2006 12.11.1998 04.02.1999