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(12) **United States Patent**  
**Bae**

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- (54) **WIRELESS POWER TRANSFER DEVICE AND WIRELESS POWER TRANSFER SYSTEM**
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- (72) Inventor: **Su Ho Bae**, Seoul (KR)
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- (\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 68 days.

- (58) **Field of Classification Search**  
CPC ..... H02J 50/80; H02J 7/025; H02J 50/40; H02M 7/53873; H04B 5/0037  
See application file for complete search history.

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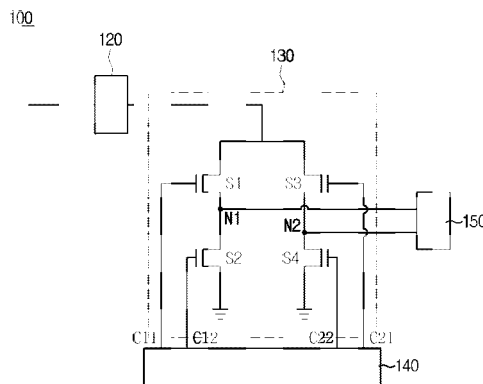
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Jan. 24, 2014 (KR) ..... 10-2014-0009243

- (51) **Int. Cl.**  
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**H02J 50/12** (2016.01)  
**H02J 50/40** (2016.01)  
**H02J 50/80** (2016.01)  
**H02J 7/02** (2016.01)  
(Continued)

- (57) **ABSTRACT**  
A wireless power transfer system according to an embodiment of the present invention is a wireless power transfer system having a receiving part for receiving power from a transmitting part, wherein the transmitting part comprises: a power conversion part comprising a full bridge inverter; and a control part for controlling the power conversion part using a pulse width modulation (PWM) control signal, the duty ratio of the PWM control signal being determined by a duty ratio in which the ratio of the magnitude of harmonics to the magnitude of a fundamental frequency among frequency components of the output signal of the power conversion part is a minimum.

- (52) **U.S. Cl.**  
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(Continued)

**8 Claims, 14 Drawing Sheets**



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**H04B 5/00** (2006.01)

(52) **U.S. Cl.**

CPC ..... **H02J 50/80** (2016.02); **H04B 5/0037**  
 (2013.01); **H04B 5/0075** (2013.01)

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FIG. 1

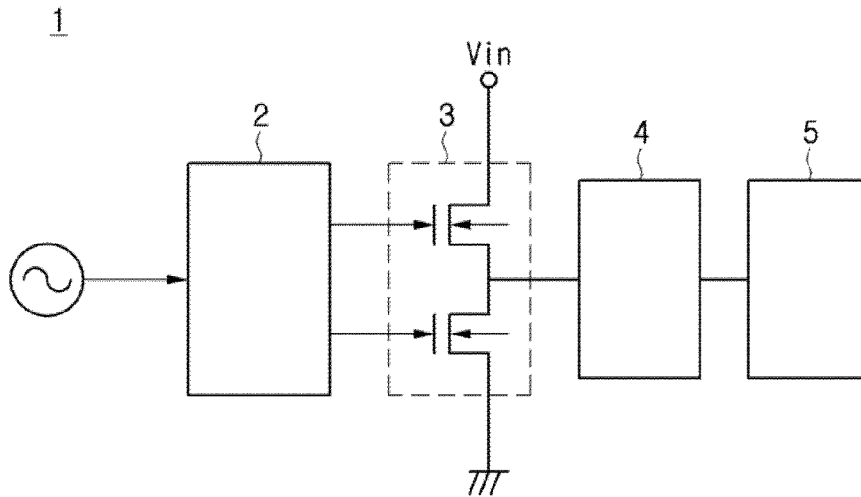


FIG. 2

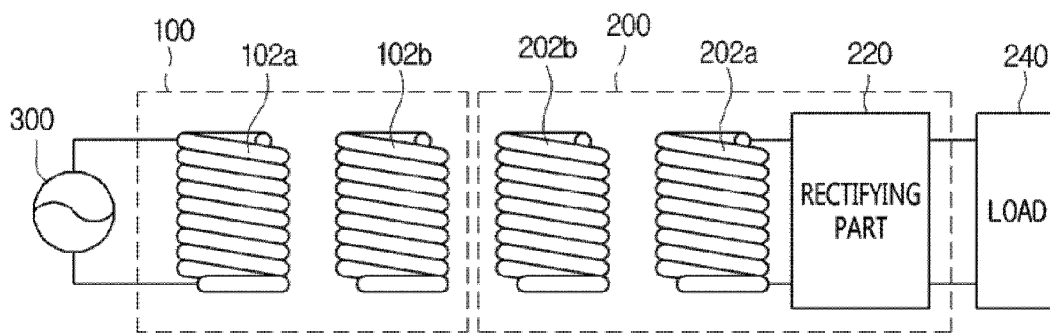


FIG. 3

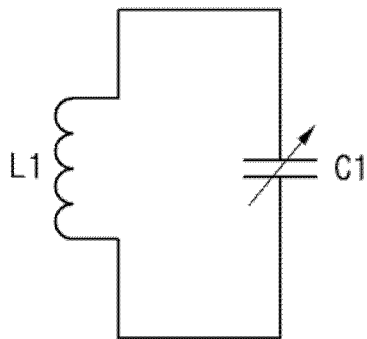


FIG. 4

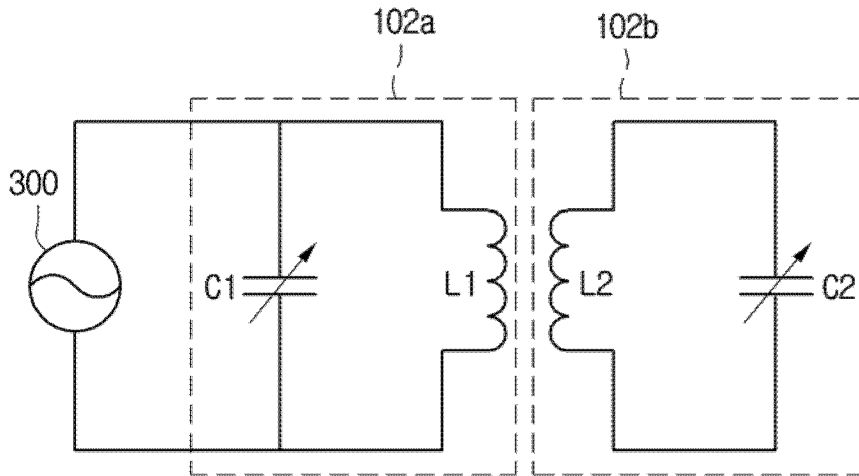


FIG. 5

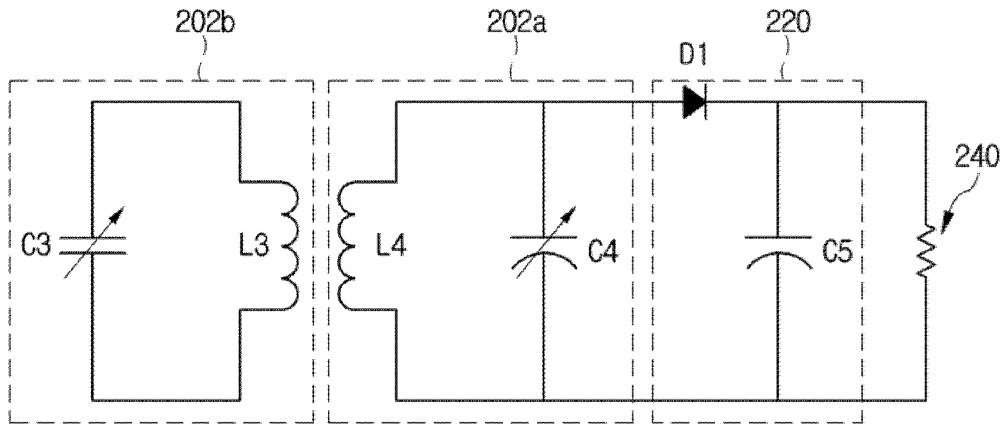
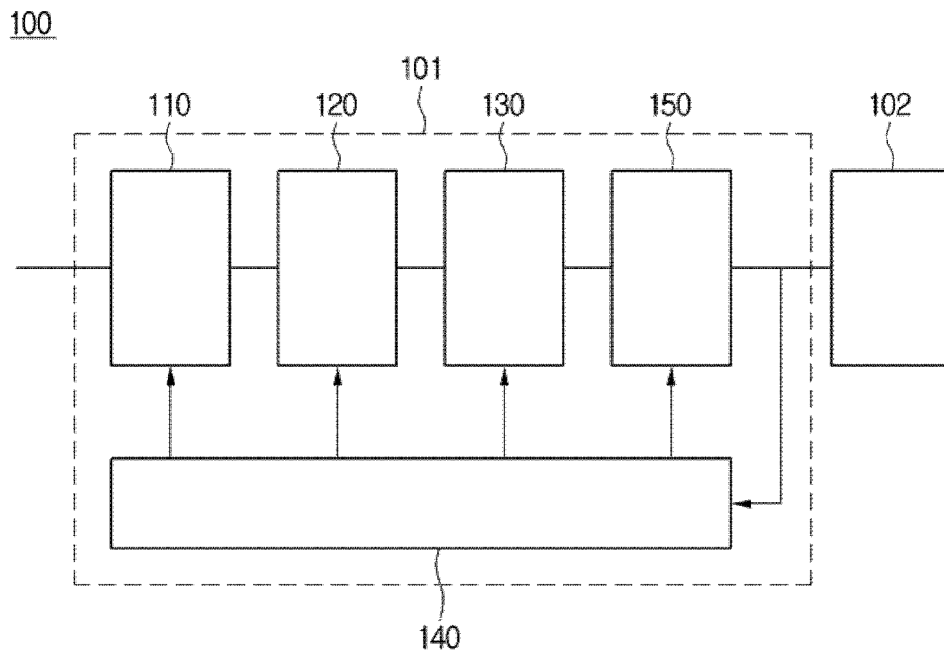


FIG. 6



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