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Tseng

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(54) **METHOD AND APPARATUS FOR WIRELESS POWER TRANSMISSION**

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(51) **Int. Cl.**

H01F 5/00	(2006.01)
H01F 27/28	(2006.01)
H01F 38/14	(2006.01)
A61C 17/22	(2006.01)

(Continued)

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

CPC ***H01F 38/14*** (2013.01); ***A61C 17/224*** (2013.01); ***H02J 7/025*** (2013.01); *H01F 17/0006* (2013.01)

(58) **Field of Classification Search**

CPC H01F 5/00; H01F 27/28
USPC 336/200, 232
See application file for complete search history.

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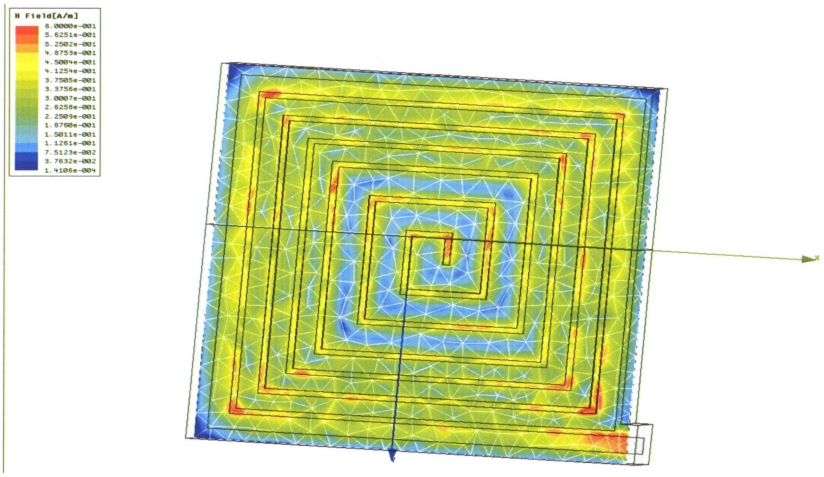
(57) **ABSTRACT**

Embodiments of the invention relate to a method and system for transferring power wirelessly to electronic devices. The system can utilize magnetic coupling between two coils at close proximity to transfer sufficient power to charge an electronic device. Embodiments of the invention pertain to an array of spiral coils that can be used to transmit power for transfer to receiver coils. Potential applications of this technology include charging consumer electronic devices (cell phones, laptops, PDAs, etc), developing hermetically sealed devices for extreme environments, and less invasive transcutaneous energy transfer (TET) systems. Various embodiments of the subject system can be referred to as PowerPad system. Embodiments can incorporate one or more of the following: planar inductors, PCB transformers, and very high frequency power supplies. Embodiments of the invention also pertain to planar inductors having characteristics that allow the production of even magnetic field, as well as systems that incorporate such planar inductors.

24 Claims, 21 Drawing Sheets
(17 of 21 Drawing Sheet(s) Filed in Color)



(51) **Int. Cl.**
H02J 7/02 (2006.01)
H01F 17/00 (2006.01)

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FIG. 1

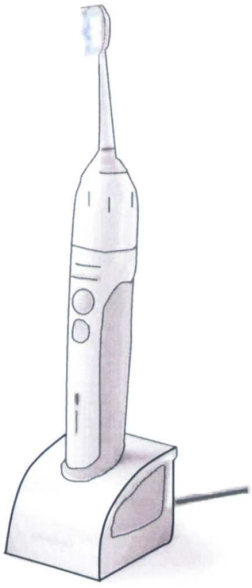

FIG. 2A

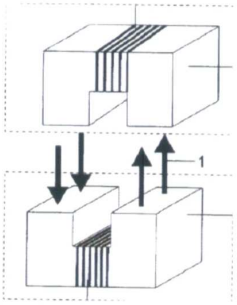

FIG. 2B

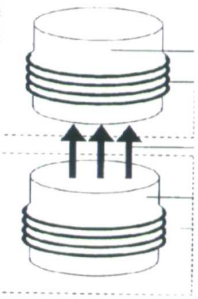

FIG. 2C

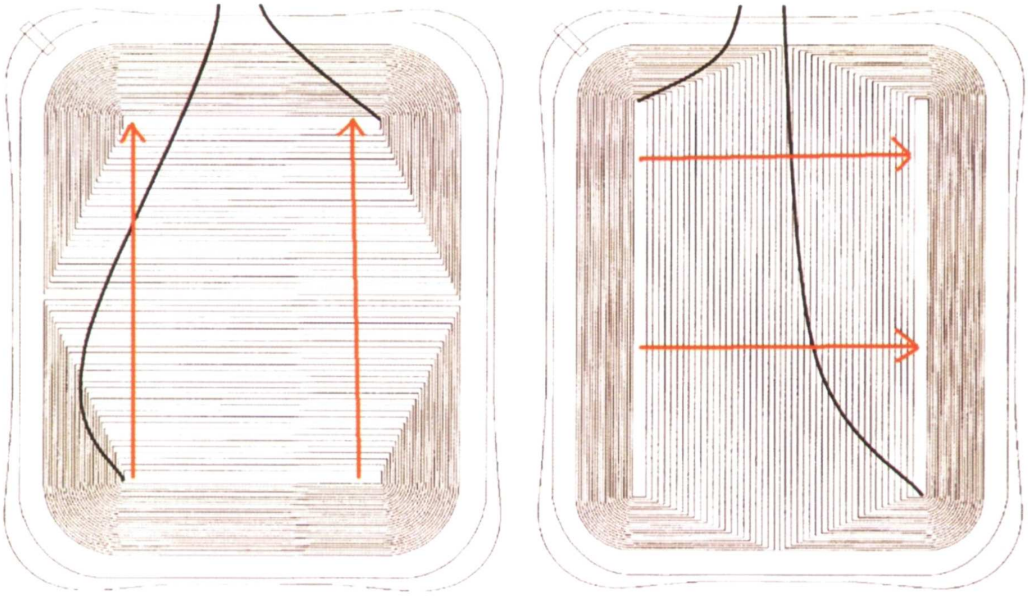

FIG. 3

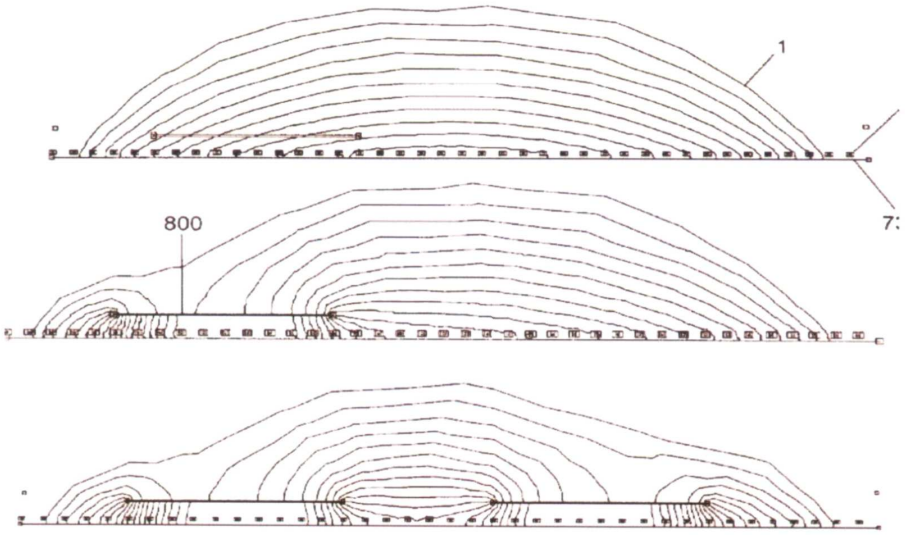

FIG. 4

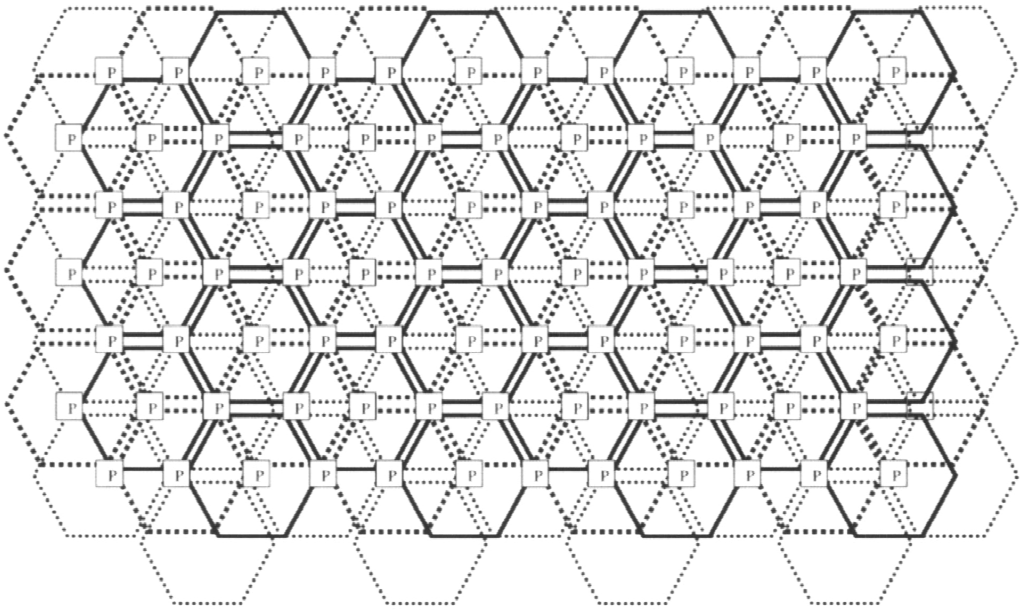

FIG. 5

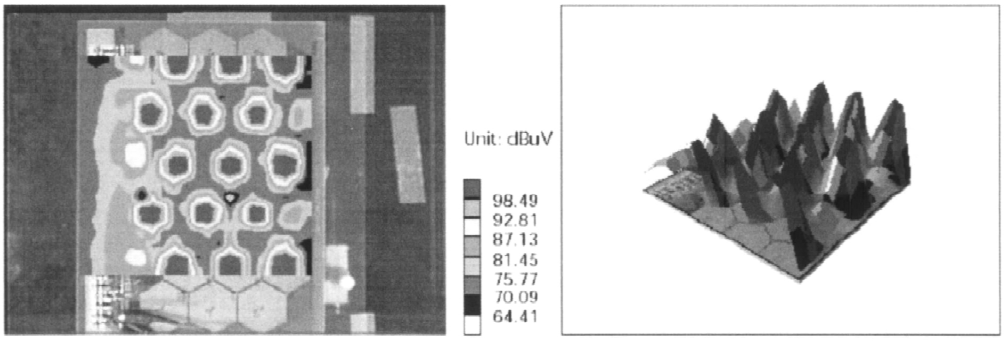

FIG. 6

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