



US008922162B2

(12) **United States Patent**
Park et al.

(10) **Patent No.:** **US 8,922,162 B2**
(45) **Date of Patent:** **Dec. 30, 2014**

(54) **PORTABLE TERMINAL HAVING A WIRELESS CHARGER COIL AND AN ANTENNA ELEMENT ON THE SAME PLANE**

(75) Inventors: **Jin-Hyoung Park**, Gangwon-do (KR); **Ki-Hyun Kim**, Gyeonggi-do (KR); **Kil-Soo Ko**, Gyeonggi-do (KR); **Se-Ho Park**, Gyeonggi-do (KR); **Sung-Kweon Park**, Gyeonggi-do (KR)

(73) Assignee: **Samsung Electronics Co., Ltd** (KR)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 479 days.

(21) Appl. No.: **13/312,359**

(22) Filed: **Dec. 6, 2011**

(65) **Prior Publication Data**
US 2013/0038278 A1 Feb. 14, 2013

(30) **Foreign Application Priority Data**
Aug. 8, 2011 (KR) 10-2011-0078611

(51) **Int. Cl.**
H01M 10/46 (2006.01)
H02J 7/00 (2006.01)

(52) **U.S. Cl.**
CPC **H02J 7/00** (2013.01)
USPC **320/108**

(58) **Field of Classification Search**
USPC 320/107, 108, 114, 115
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2011/0050164 A1* 3/2011 Partovi et al. 320/108
2012/0146576 A1* 6/2012 Partovi 320/108

* cited by examiner

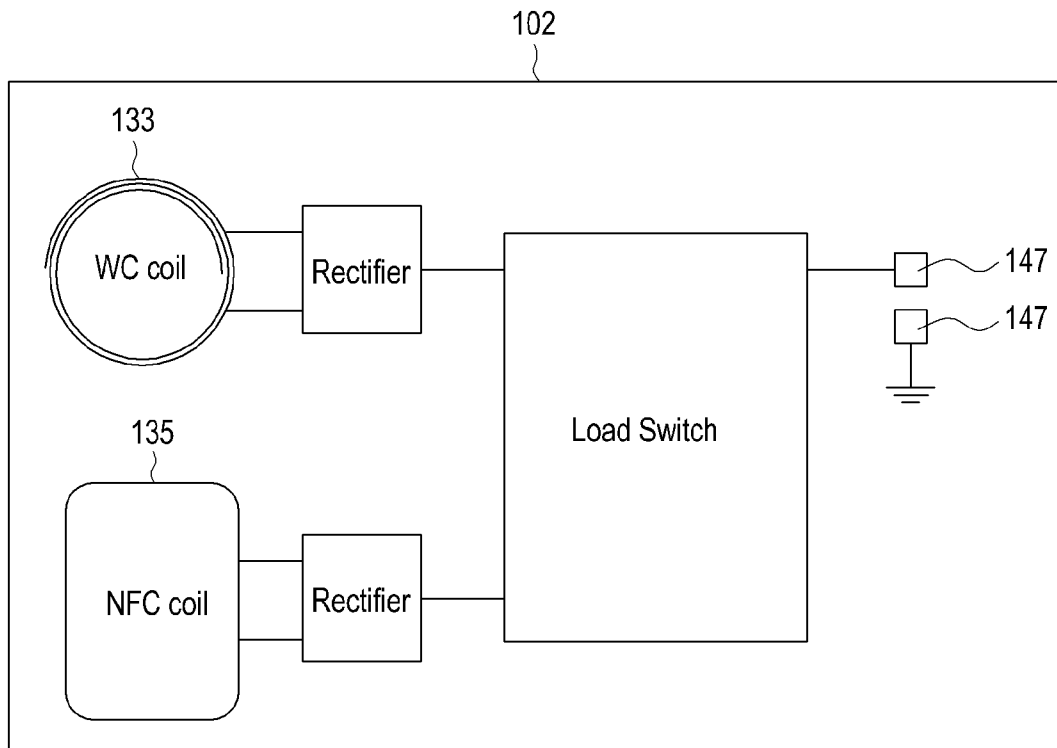
Primary Examiner — Edward Tso

(74) *Attorney, Agent, or Firm* — The Farrell Law Firm, P.C.

(57) **ABSTRACT**

A portable terminal having a wireless charger coil and an antenna element on the same plane is provided, in which a shielding member is attached to an inner surface of an external part, a first coil is attached to one surface of the shielding member, facing the inner surface of the external part, and a second coil is attached to the one surface of the shielding member, surrounding the first coil on the same plane.

15 Claims, 4 Drawing Sheets



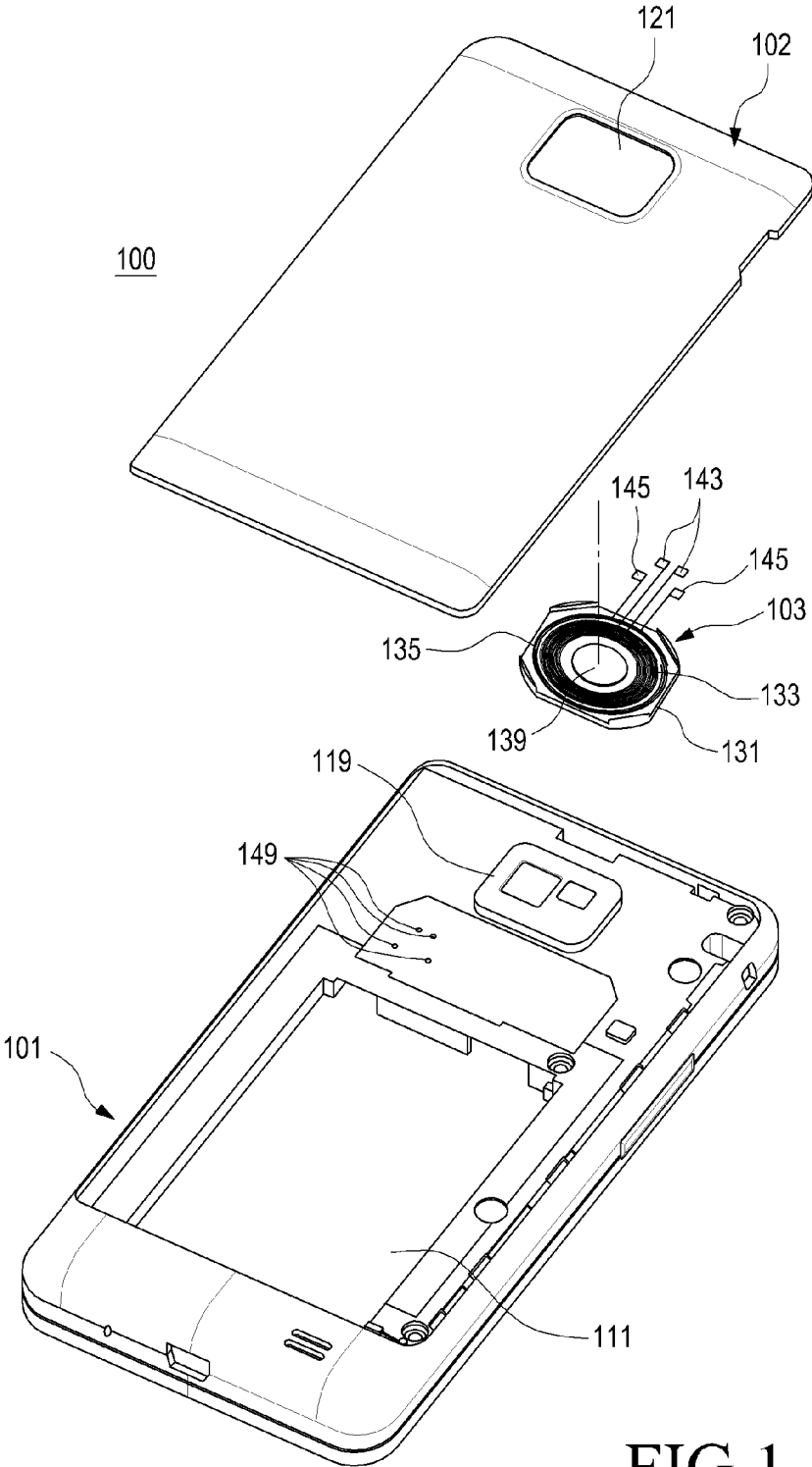


FIG. 1

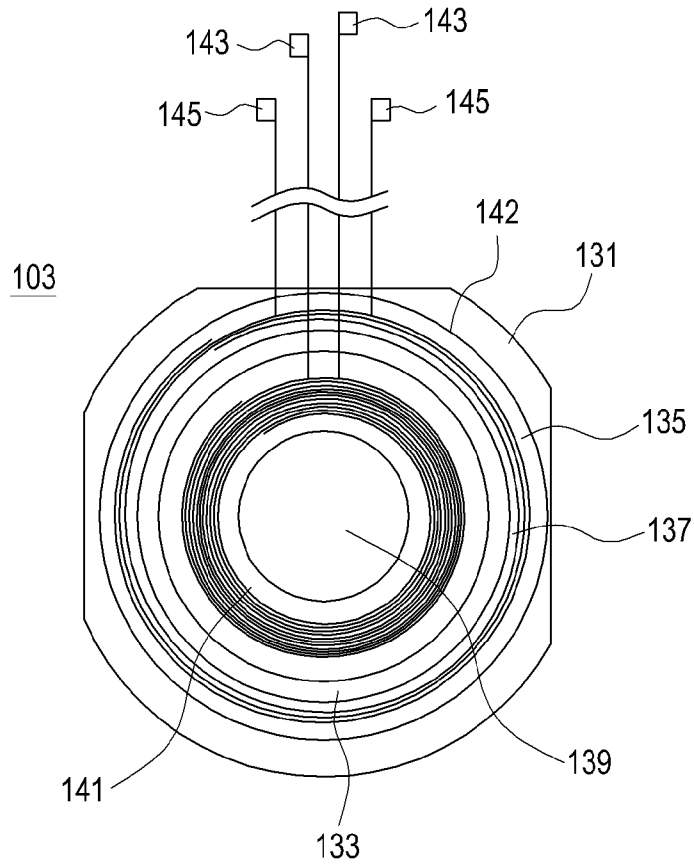


FIG. 2

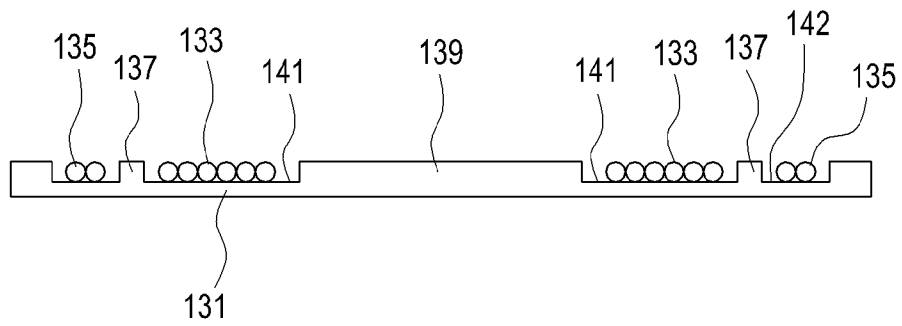


FIG. 3

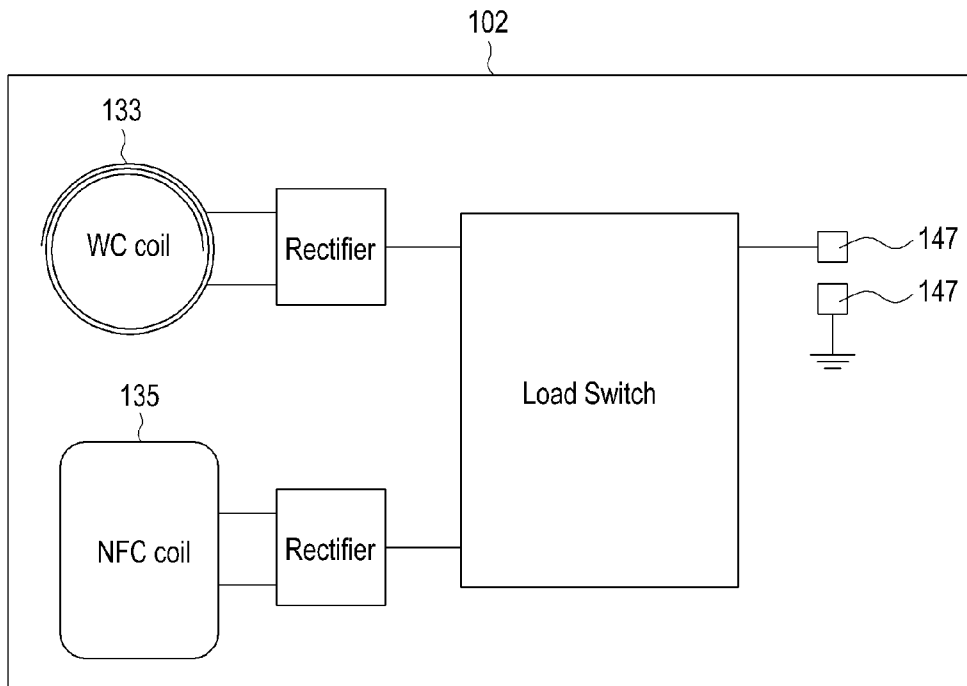


FIG.8

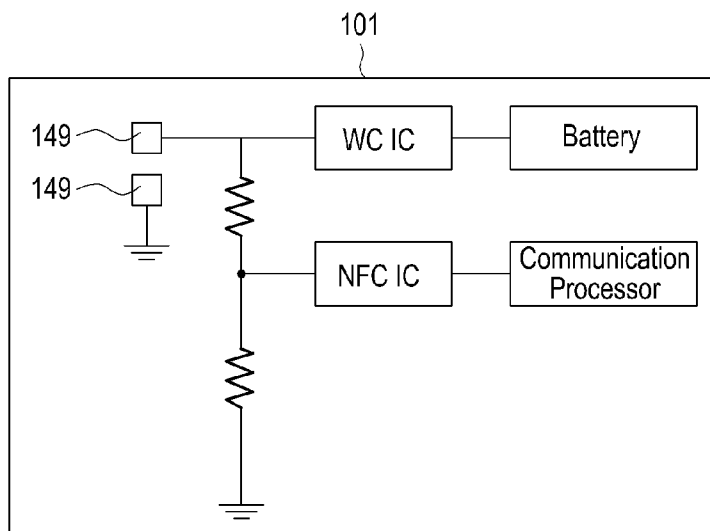


FIG.9

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.