



US 20130119773A1

(19) **United States**

(12) **Patent Application Publication**
Davis

(10) **Pub. No.: US 2013/0119773 A1**

(43) **Pub. Date: May 16, 2013**

(54) **SYSTEMS AND METHODS FOR INDUCTION CHARGING WITH A CLOSED MAGNETIC LOOP**

Publication Classification

(51) **Int. Cl.**
H02J 17/00 (2006.01)
(52) **U.S. Cl.**
USPC 307/104

(75) Inventor: **Roy Howard Davis**, Del Mar, CA (US)

(73) Assignee: **QUALCOMM Incorporated**, San Diego, CA (US)

(57) **ABSTRACT**

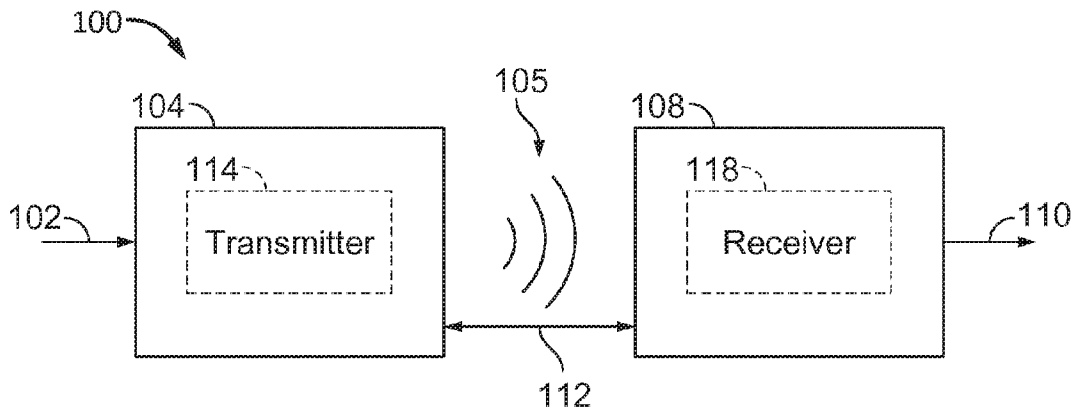
Systems, methods, and computer program products for induction charging with a closed magnetic loop are described herein. In one aspect, an apparatus for wireless power transmission comprises a plurality of coplanar coils, each of the plurality of coplanar coils configured to be individually energized and produce a magnetic field. Further, the controller is configured to reverse polarity of the magnetic field of at least one of the plurality of coplanar coils based on a measure of coupling between coils and to select at least two of the plurality of coplanar coils for wireless power transmission based on the measure of coupling between coils.

(21) Appl. No.: **13/427,726**

(22) Filed: **Mar. 22, 2012**

Related U.S. Application Data

(60) Provisional application No. 61/560,135, filed on Nov. 15, 2011.



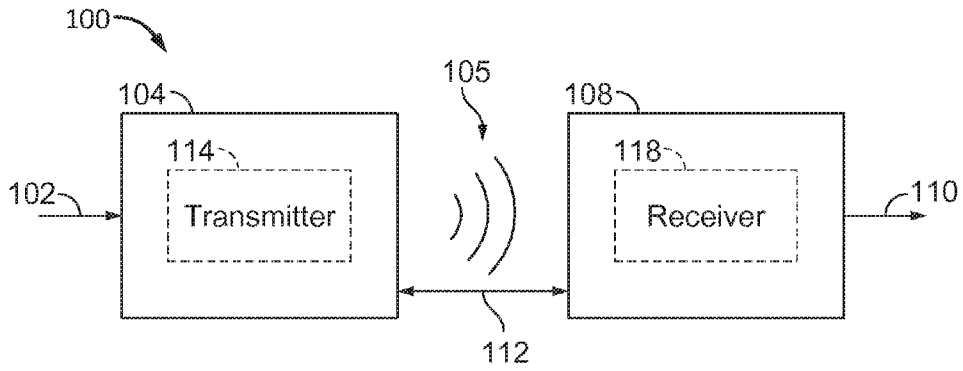


FIG. 1

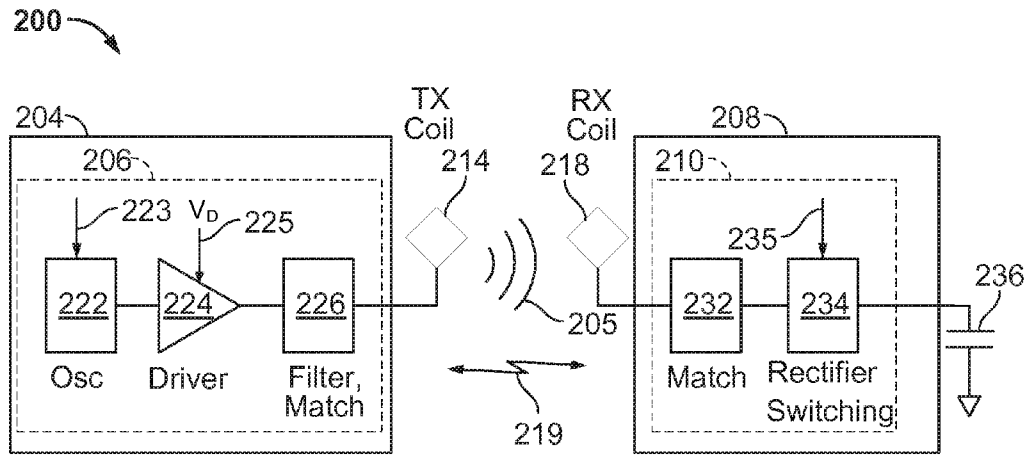


FIG. 2

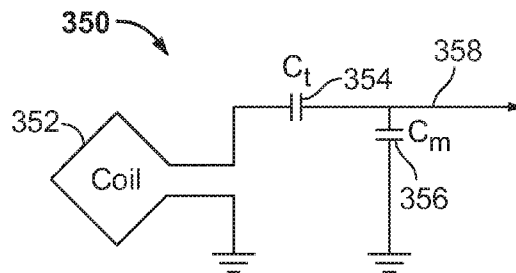


FIG. 3

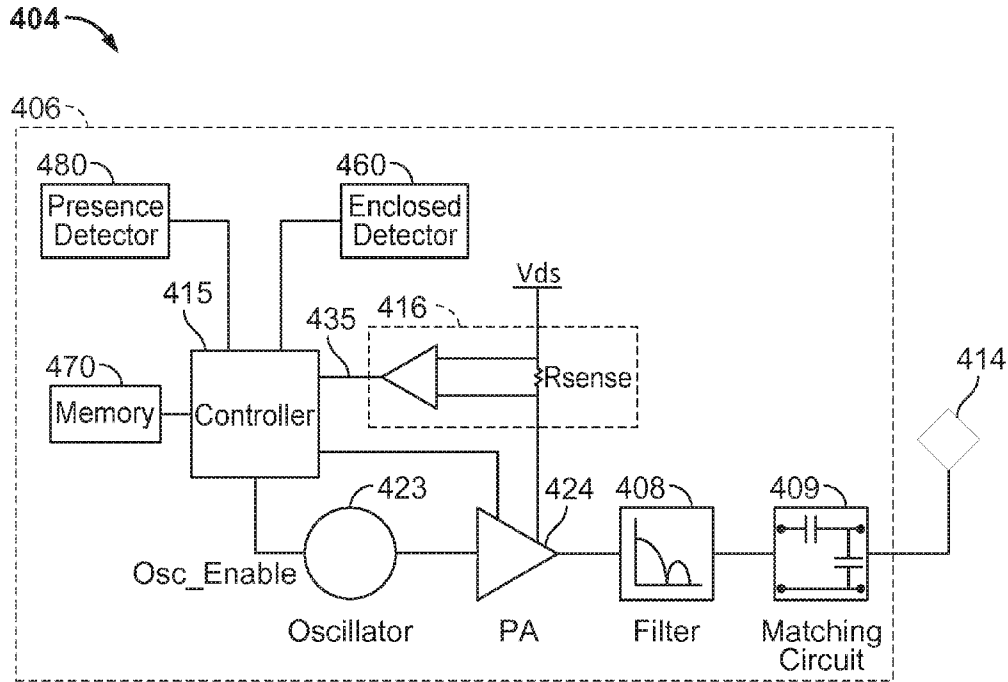


FIG. 4

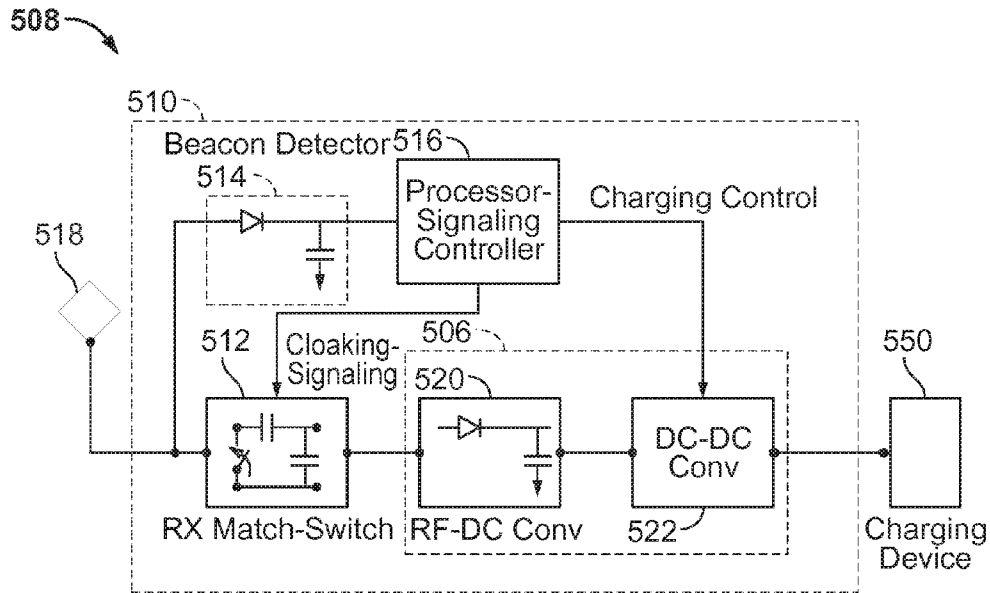


FIG. 5

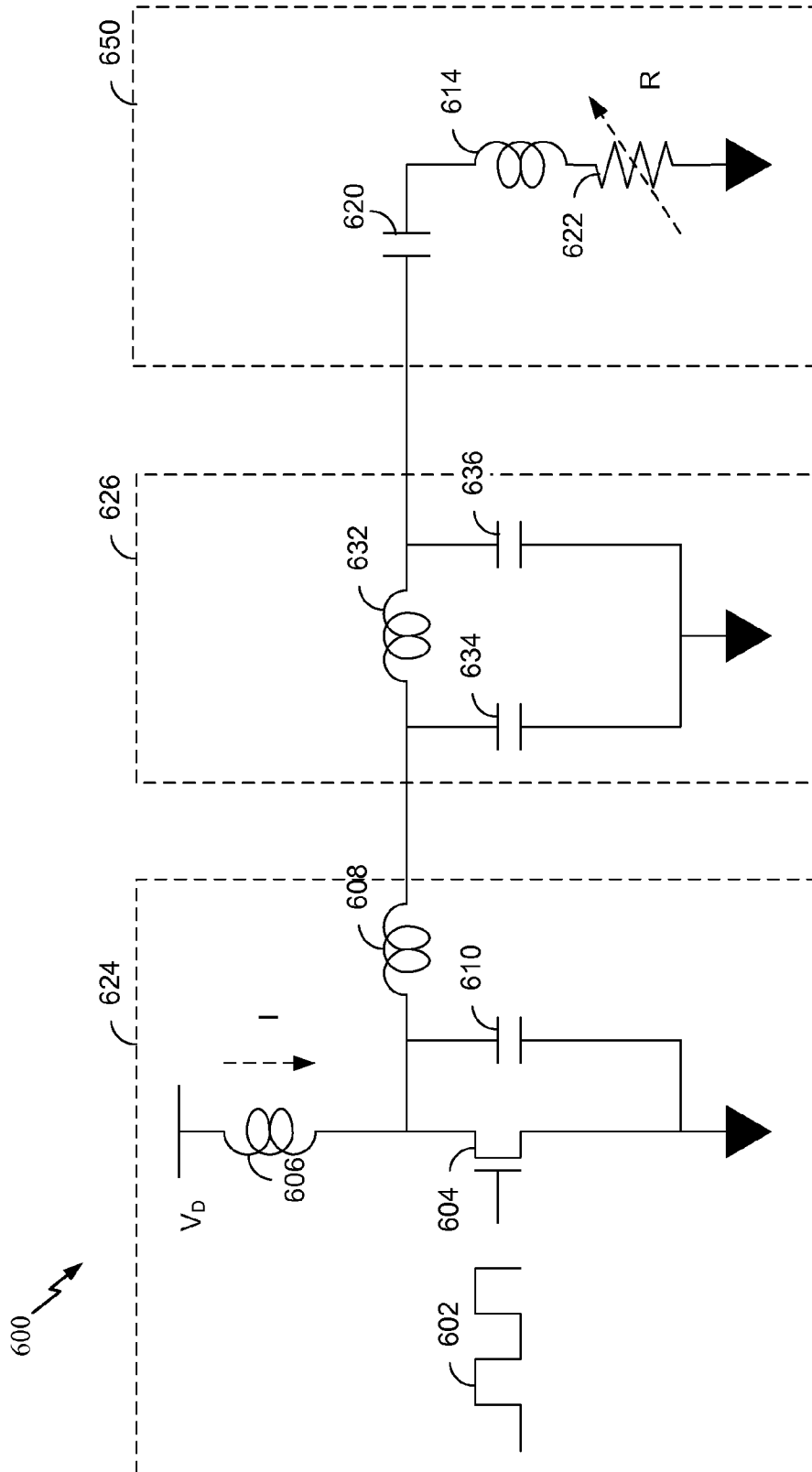


FIG. 6

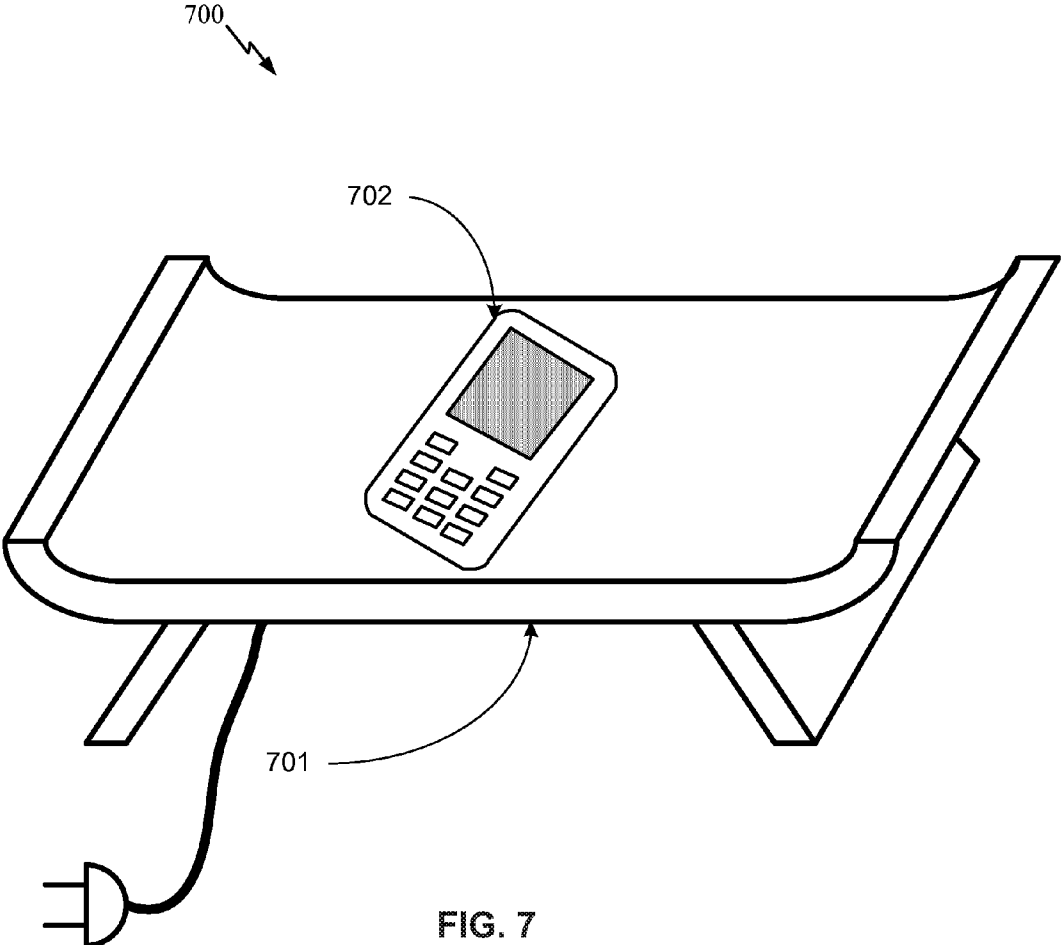


FIG. 7

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.