



US 20110115429A1

(19) **United States**

(12) **Patent Application Publication**
TOIVOLA et al.

(10) **Pub. No.: US 2011/0115429 A1**

(43) **Pub. Date: May 19, 2011**

(54) **WIRELESS CHARGING ADAPTER
COMPATIBLE WITH WALL CHARGER AND
WIRELESS CHARGING PLATE**

(52) **U.S. Cl. 320/108; 307/104**

(57) **ABSTRACT**

(75) **Inventors: Timo Tapani TOIVOLA, Turku (FI); Juhani Valdemar KARI, Lieto (FI)**

Example embodiments are disclosed for wirelessly charging batteries of relatively small devices, such as wireless headsets, using a relatively large wireless charging plate. In example embodiments of the invention, a high permeability magnetic field concentrator has a generally frusto-conical shape with a base at one end, tapering down to a pole at the opposite end. The concentrator is configured to concentrate magnetic flux at a lower flux density incident at the base from a proximate power transmitting coil having a relatively large surface area in a wireless charger. The magnetic flux exits at a higher flux density at the pole end proximate to a power receiving coil having a relatively small surface area in a utilization device. The higher density magnetic flux couples with the power receiving coil, using contact-less electromagnetic induction. The wireless charger may be a charging plate and the utilization device may be a wireless headset. The magnetic field concentrator enables gathering sufficient power by the relatively small power receiving coil to charge the headset's batteries within a reasonable time.

(73) **Assignee: Nokia Corporation, Espoo (FI)**

(21) **Appl. No.: 12/618,276**

(22) **Filed: Nov. 13, 2009**

Publication Classification

(51) **Int. Cl.**
H02J 7/00 (2006.01)
H01F 27/42 (2006.01)

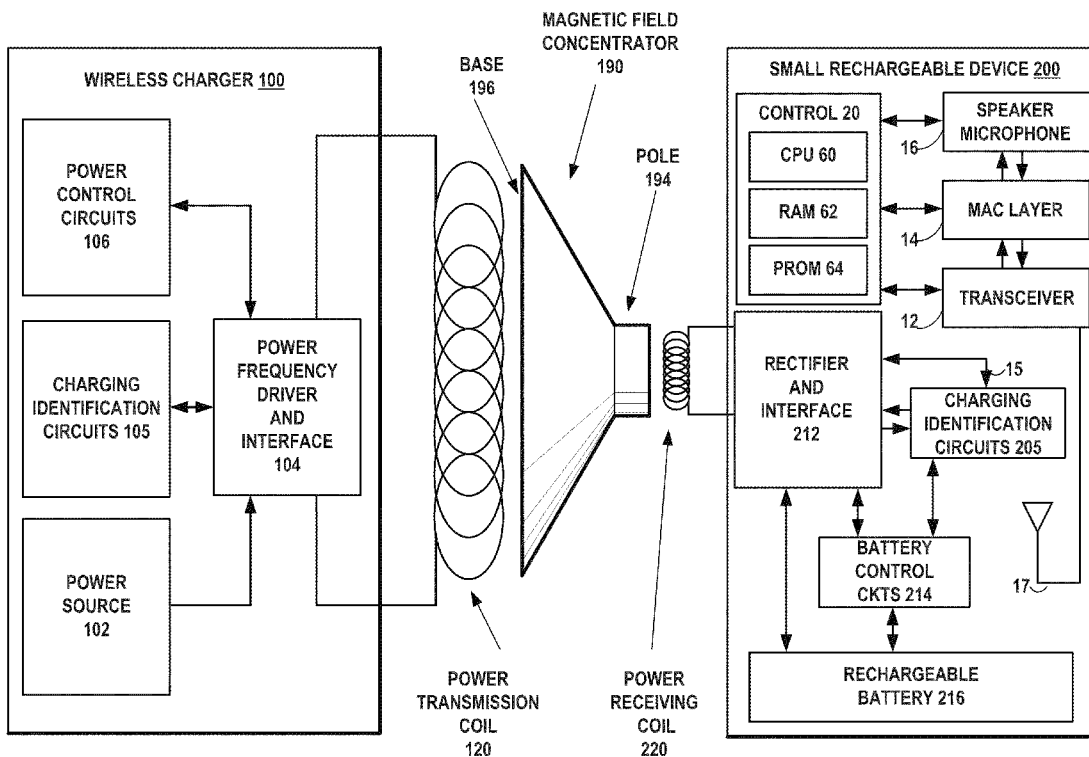


FIG. 1

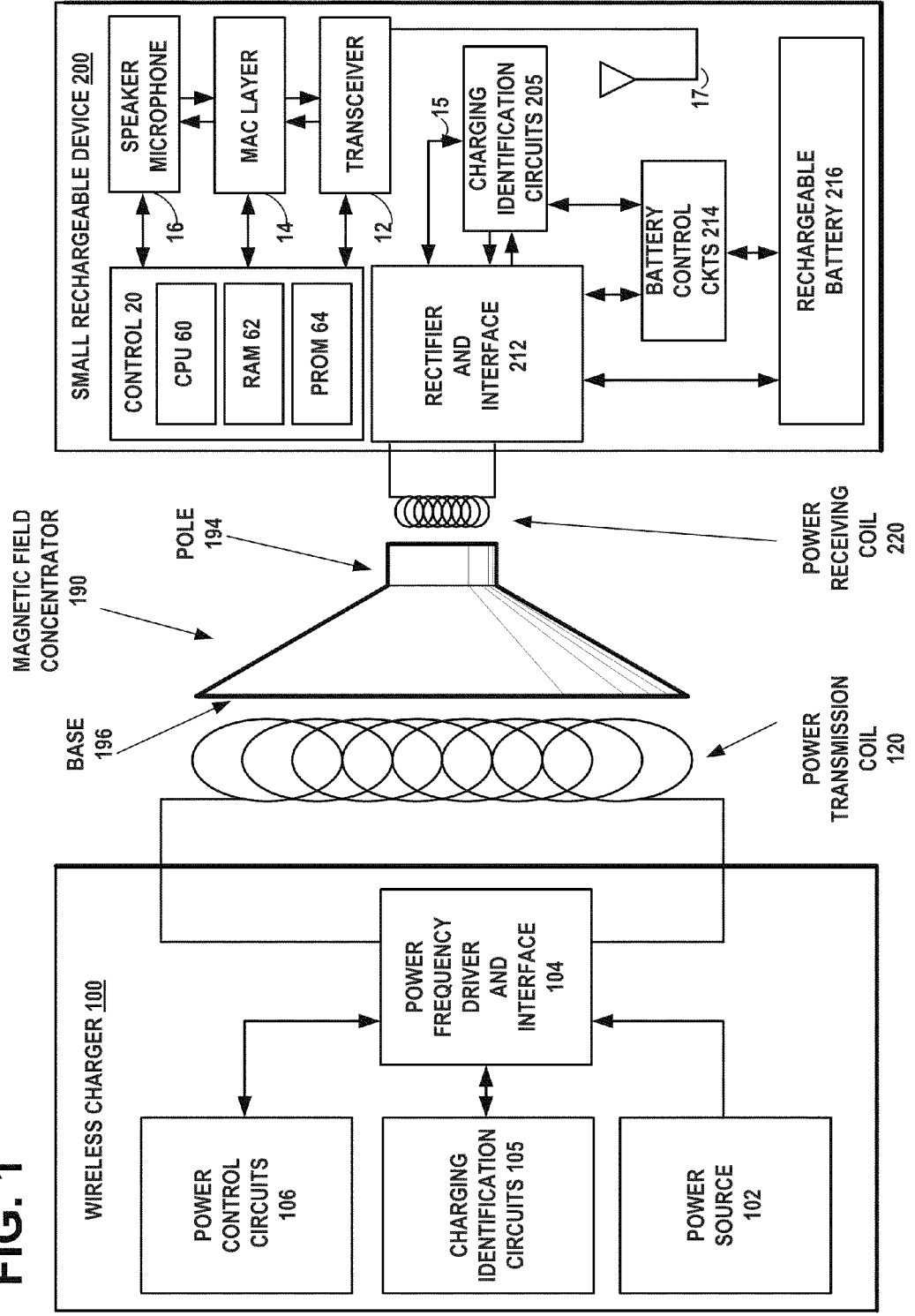
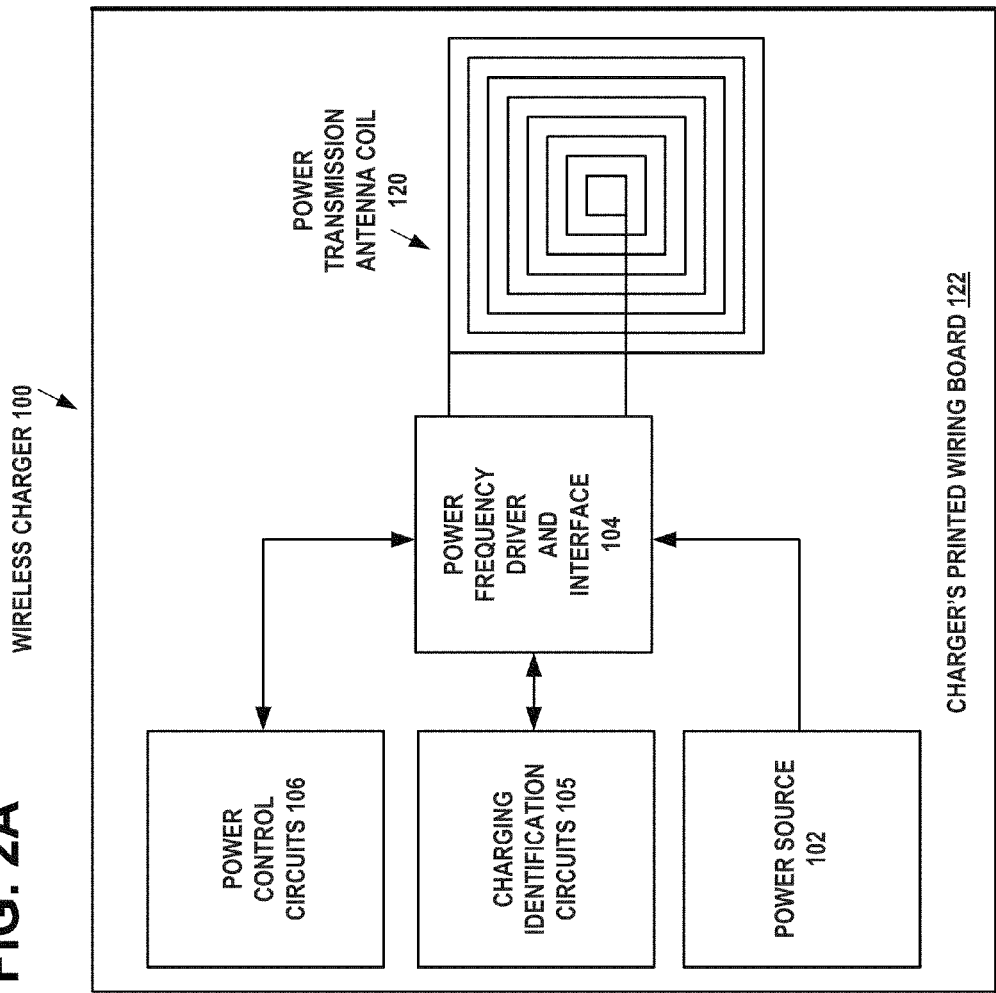


FIG. 2A



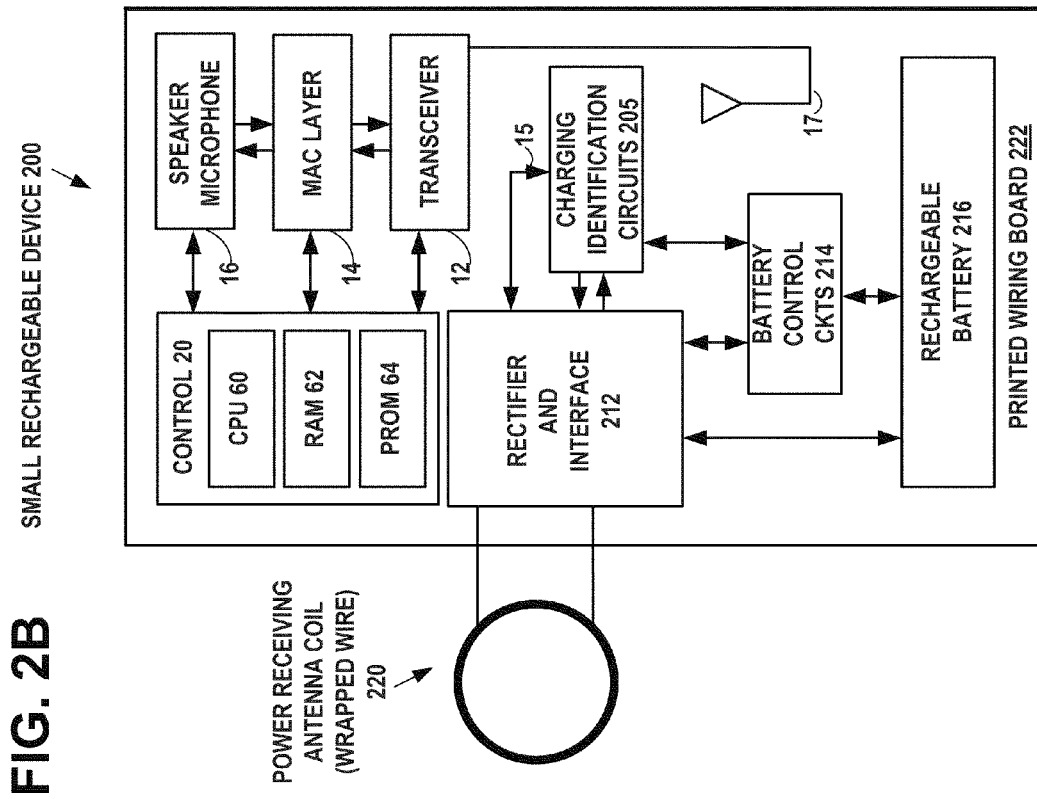
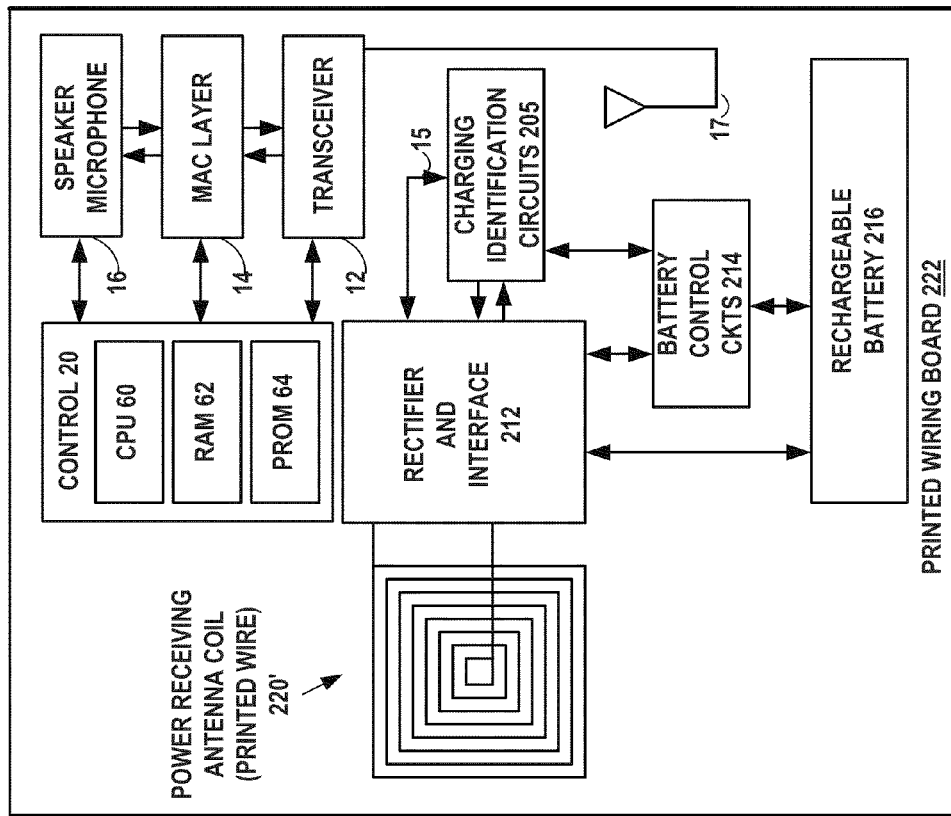


FIG. 2C SMALL RECHARGEABLE DEVICE 200



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.