



US 20040256468A1

(19) **United States**

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

(10) **Pub. No.: US 2004/0256468 A1**

(43) **Pub. Date: Dec. 23, 2004**

(54) **ANTENNA DEVICE AND COMMUNICATION
DEVICE USING ANTENNA DEVICE**

(30) **Foreign Application Priority Data**

Sep. 25, 2002 (JP) 2002-27926

(76) Inventors: **Hiraku Akiho**, Miyagi (JP); **Yutaka Okazaki**, Tokyo (JP); **Akihiro Kikuchi**, Chiba (JP); **Kazuo Goto**, Kanagawa (JP); **Kazuhiko Urayama**, Tokyo (JP)

Publication Classification

(51) **Int. Cl.⁷** **G06K 19/06**

(52) **U.S. Cl.** **235/492**

Correspondence Address:

**WOLF GREENFIELD & SACKS, PC
FEDERAL RESERVE PLAZA
600 ATLANTIC AVENUE
BOSTON, MA 02210-2211 (US)**

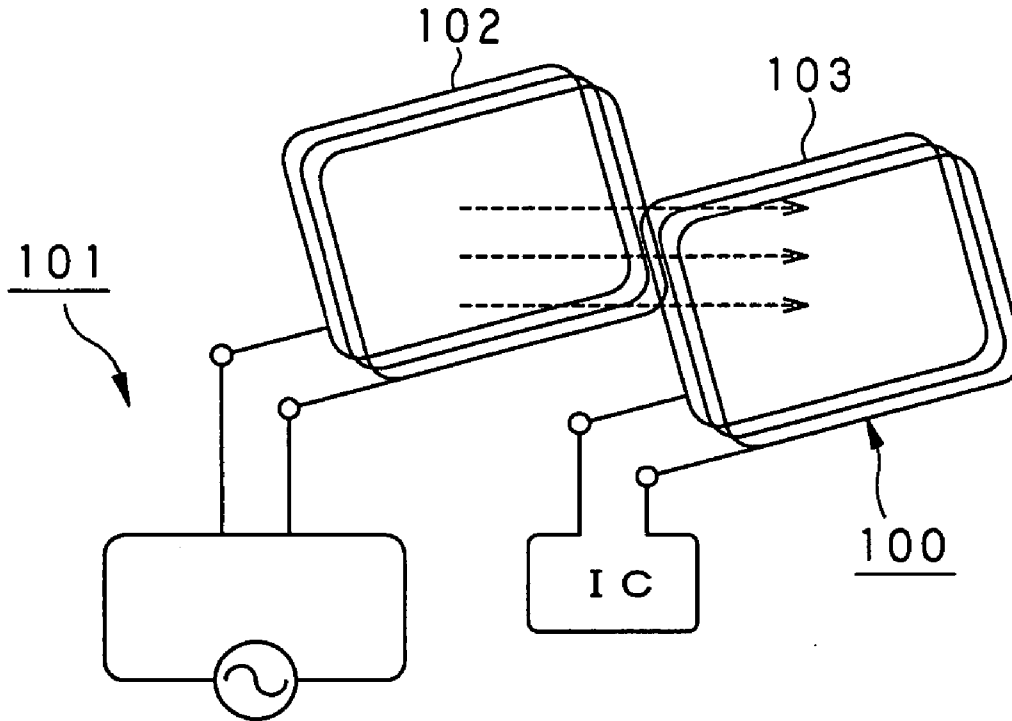
(57) **ABSTRACT**

An antenna device (60) is provided that is used in a recorder and/or writer destined for writing and reading data to and from a contactless IC card (1). The antenna device (60) includes a loop coil (61) that radiates a magnetic field, magnetically couples with a loop coil (4) provided in the IC card (1), and sends and receives data to and from the IC card (1). The loop coil (61) is formed asymmetric for the winding sections thereof opposite to each other across the center of the loop coil (61) to be different in interval from each other.

(21) Appl. No.: **10/496,636**

(22) PCT Filed: **Aug. 28, 2003**

(86) PCT No.: **PCT/JP03/10985**



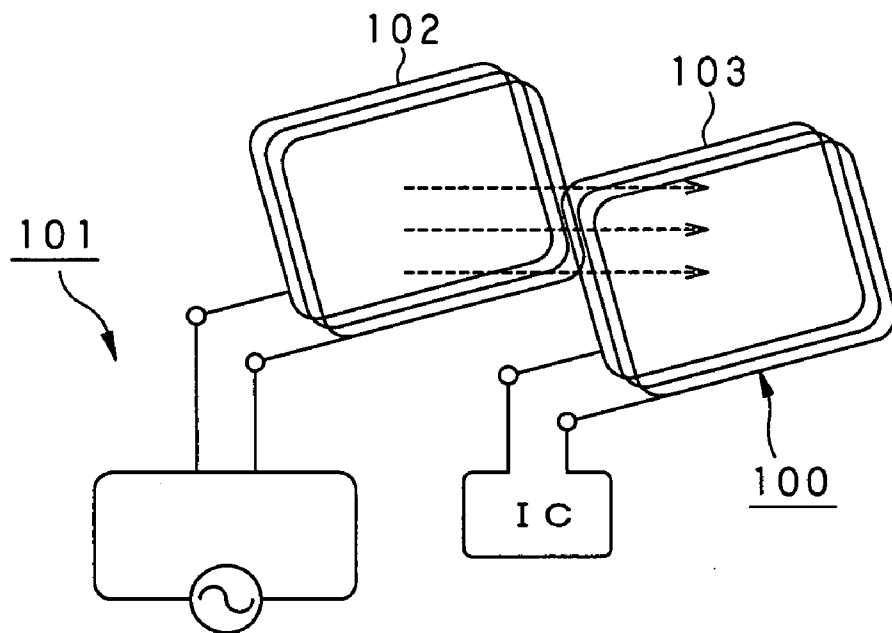


FIG. 1

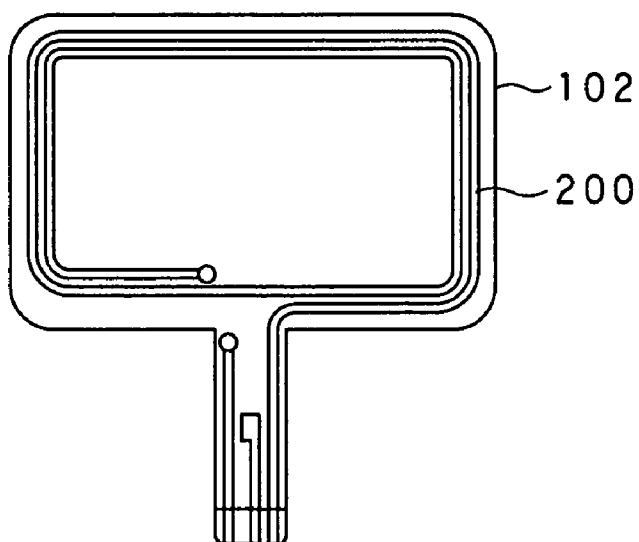


FIG. 2

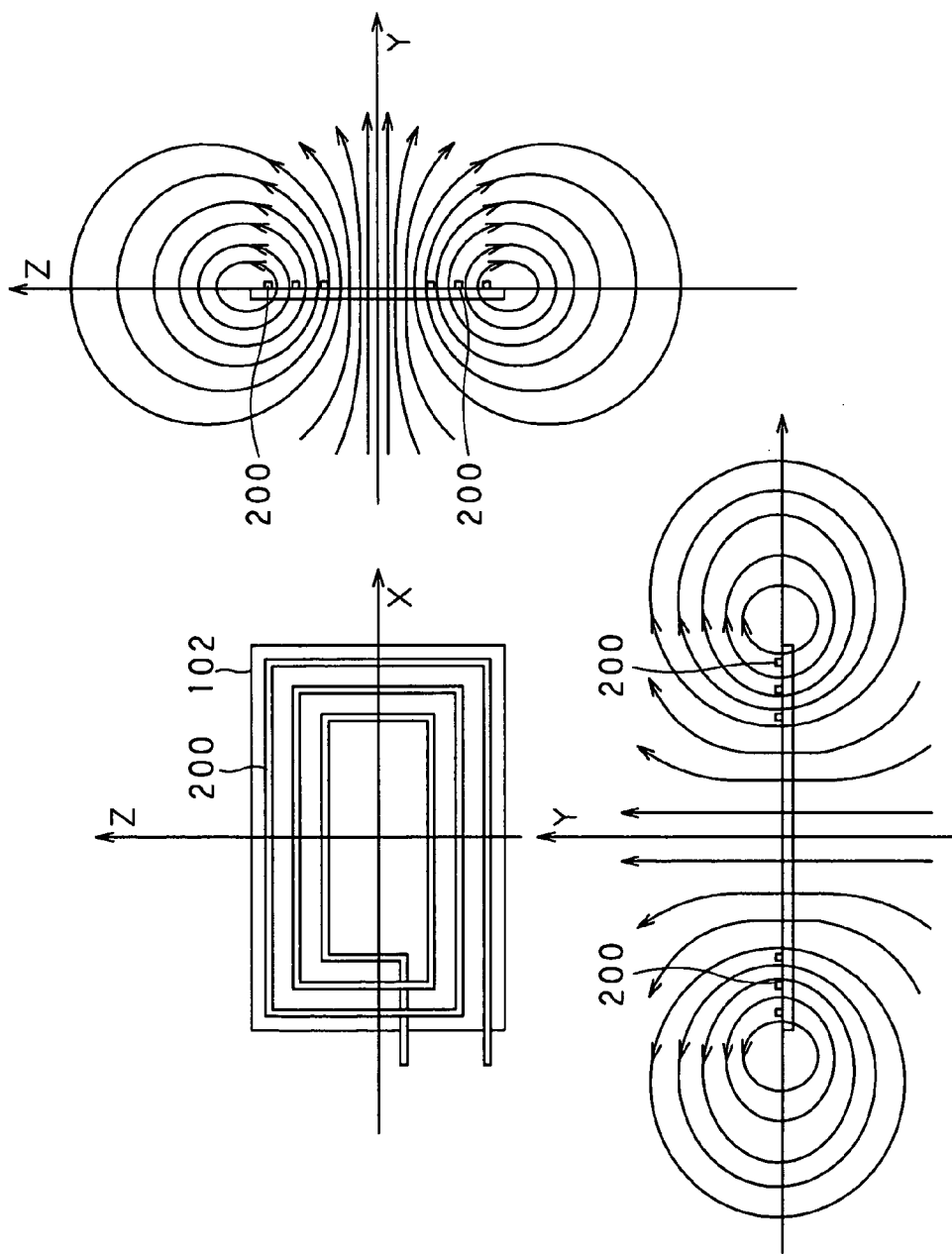


FIG. 3

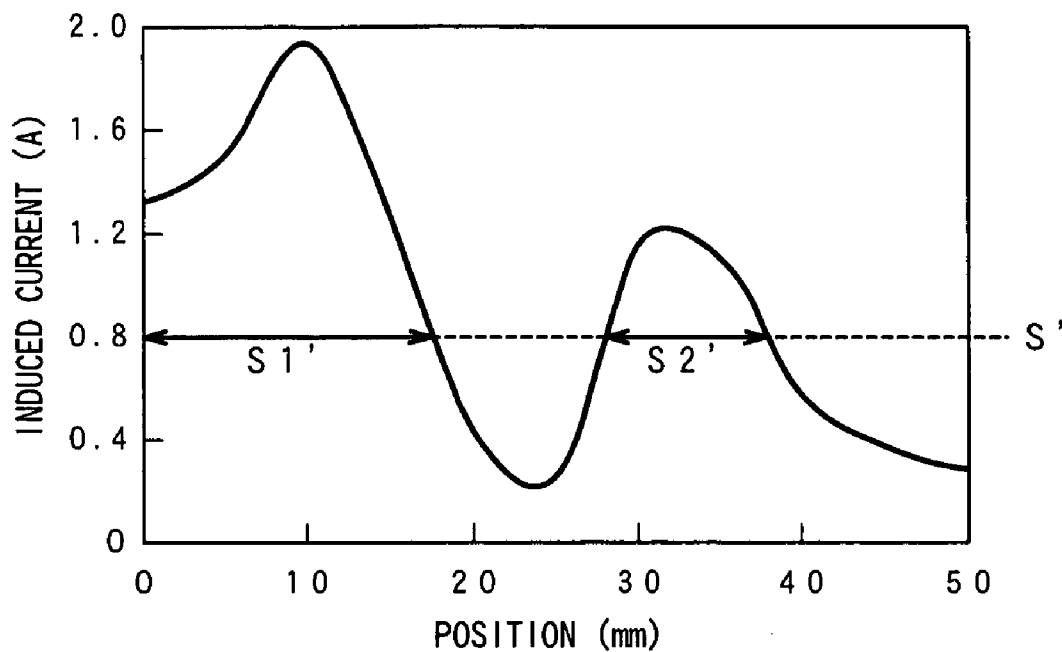


FIG.4

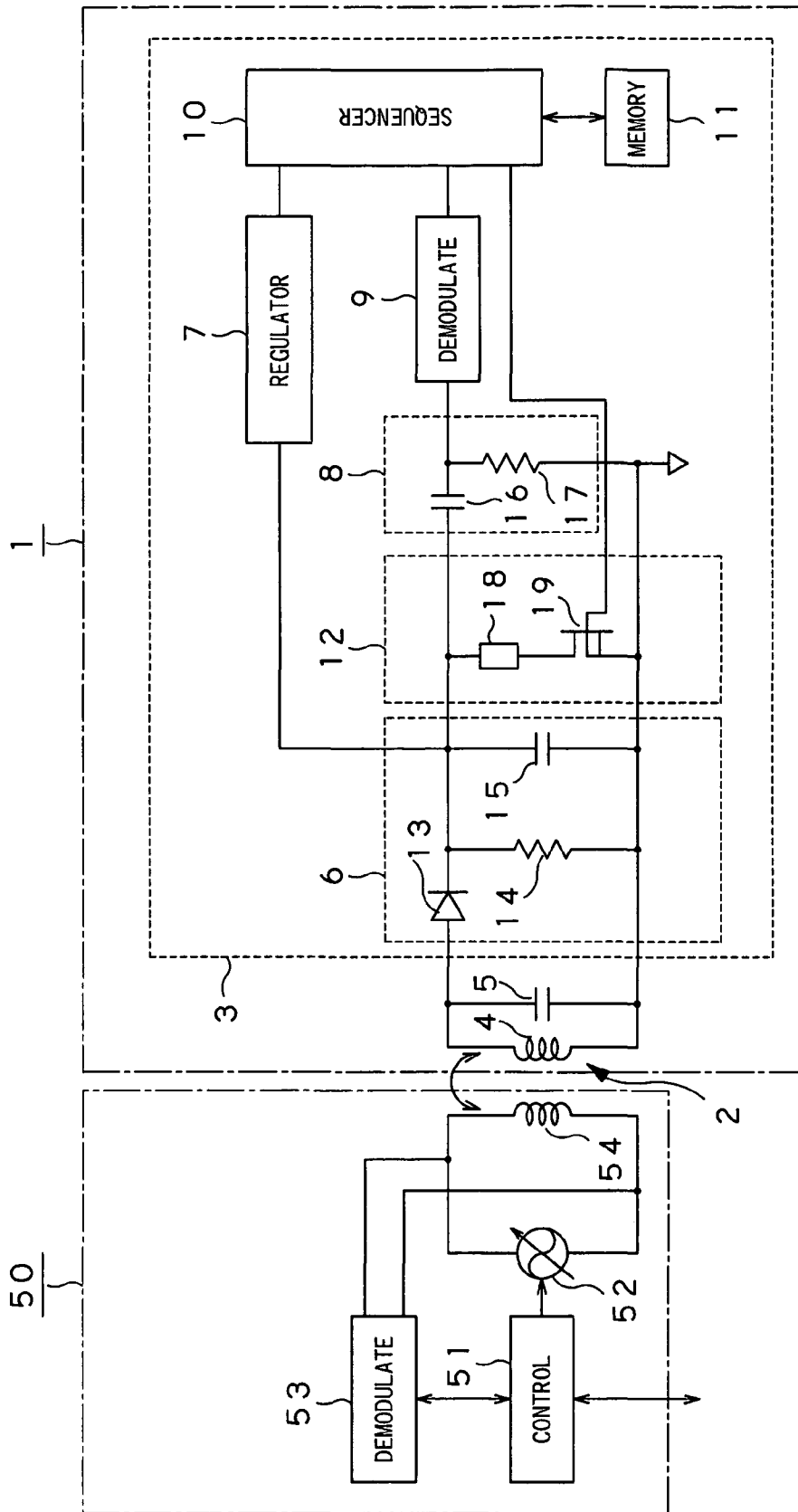


FIG. 5

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.