

[54] CHARGING APPARATUS FOR AN ELECTRONIC DEVICE

[75] Inventors: Kenji Sakamoto; Nobuo Ishikawa; Motomu Hayakawa, all of Suwa, Japan

[73] Assignee: Seiko Epson Corporation, Tokyo, Japan

[21] Appl. No.: 216,914

[22] Filed: Jul. 7, 1988

[30] Foreign Application Priority Data

- Jul. 10, 1987 [JP] Japan 62-106457[U]
- Jul. 15, 1987 [JP] Japan 62-176399
- Jul. 15, 1987 [JP] Japan 62-176400
- Jul. 15, 1987 [JP] Japan 62-176401

[51] Int. Cl.⁴ G04C 10/04; H01M 10/44

[52] U.S. Cl. 368/204; 320/2; 320/61

[58] Field of Search 368/64, 66, 203-205; 320/2, 21, 61

[56] References Cited

U.S. PATENT DOCUMENTS

- 4,371,269 2/1983 Sutter 368/205
- 4,644,246 2/1987 Knaden 320/21

FOREIGN PATENT DOCUMENTS

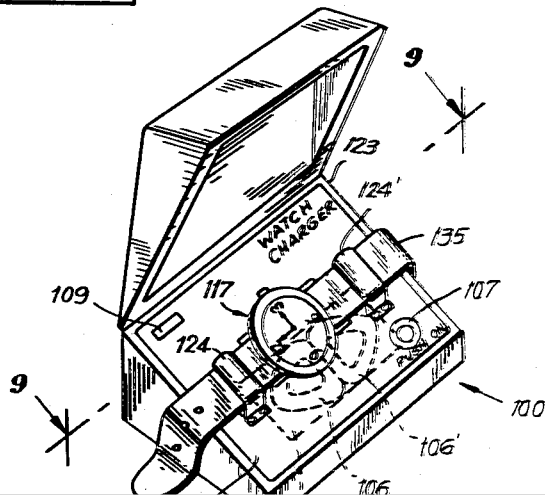
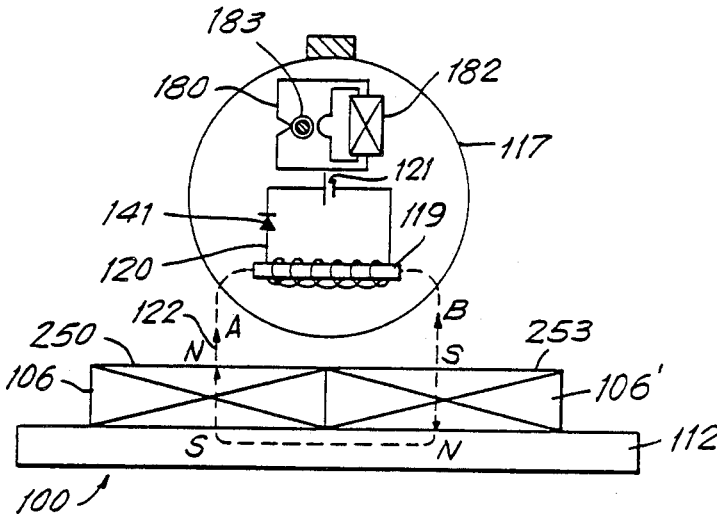
- 1027143 3/1958 Fed. Rep. of Germany 368/204
- 53-82473 7/1978 Japan 368/203
- 60-174976 9/1985 Japan 368/203
- 336027 3/1959 Switzerland 368/204

Primary Examiner—Vit W. Miska
Attorney, Agent, or Firm—Blum Kaplan

[57] ABSTRACT

An apparatus for charging a power storage device provided within an electronic device. A power source provides direct current which is alternated in direction through a pair of primary coils for inducing alternating current in a secondary coil of the electronic device. The pair of primary coils are fixed to a coil yoke all of which are supported within a casing of the apparatus. During charging of the power storage device, the electronic device is mounted to the outside surface of the casing whereby substantially all of the magnetic flux of the magnetic field produced by the pair of primary coils flows through the secondary coil and coil yoke. The frequency of the oscillating signal is preset to provide the maximum induced current which will not adversely affect the movement of the analog mechanisms within the electronic device.

36 Claims, 6 Drawing Sheets



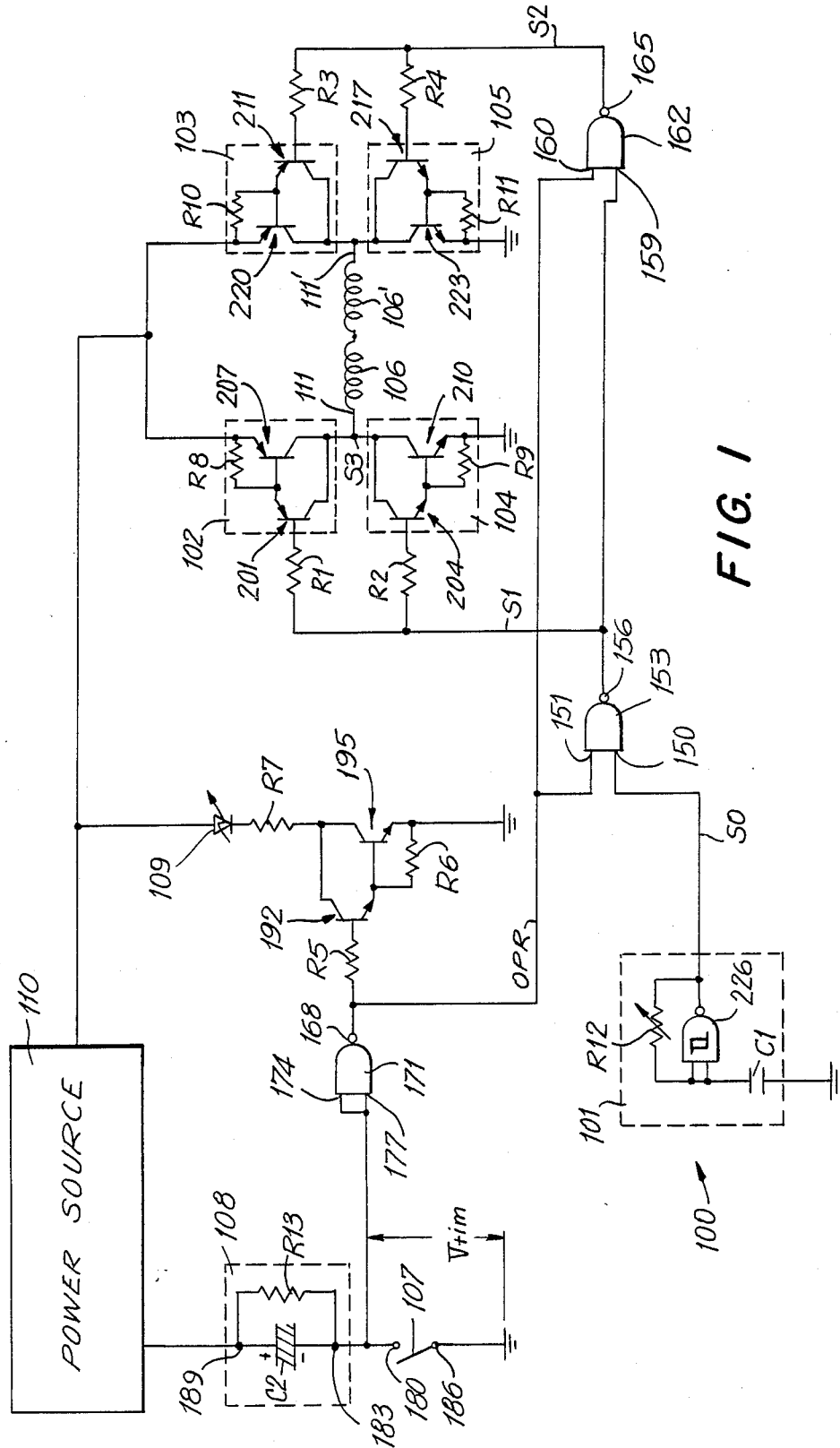


FIG. 1

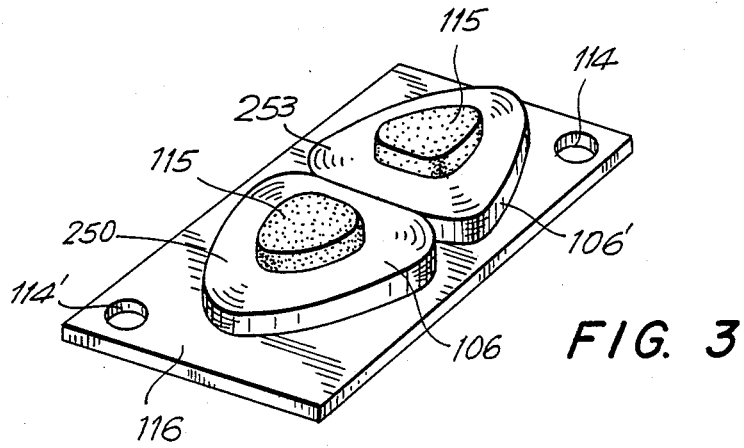
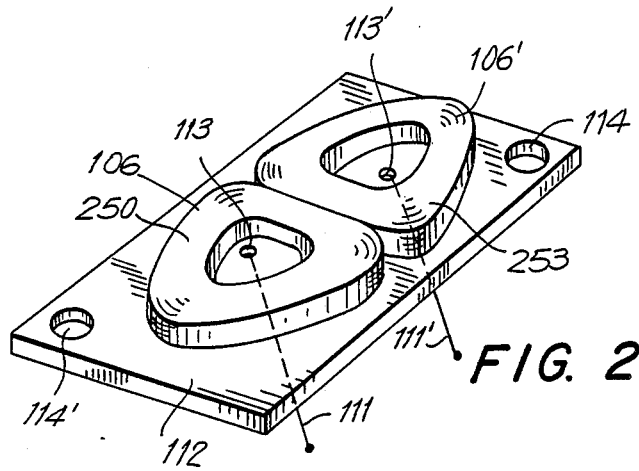


FIG. 4

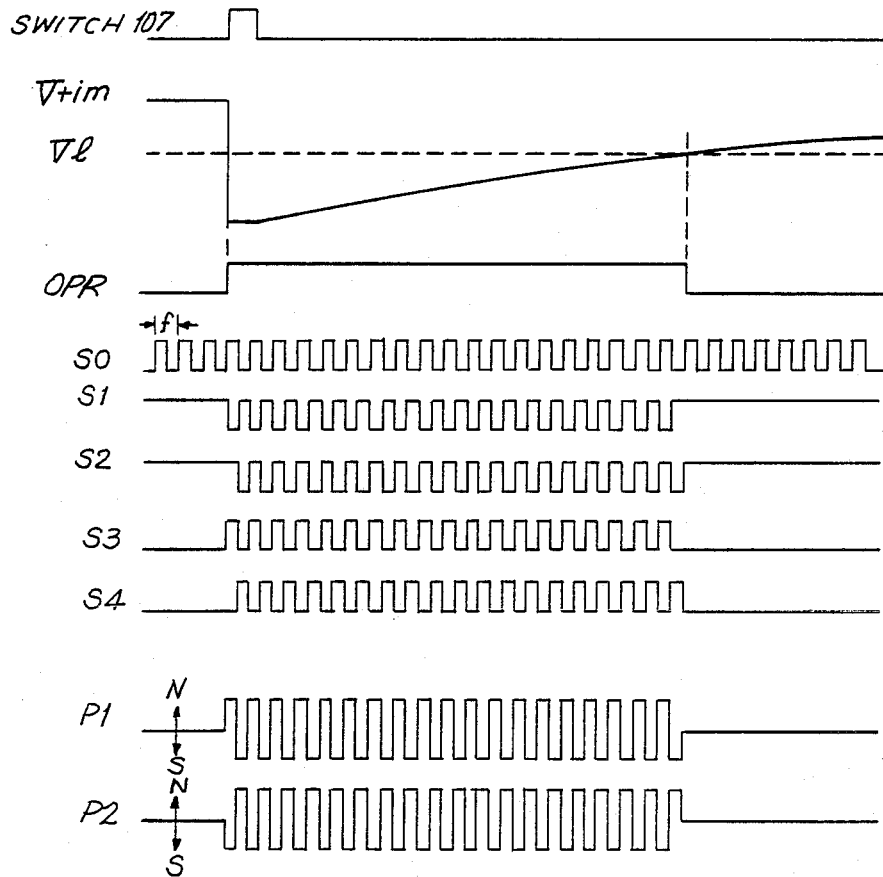


FIG. 5

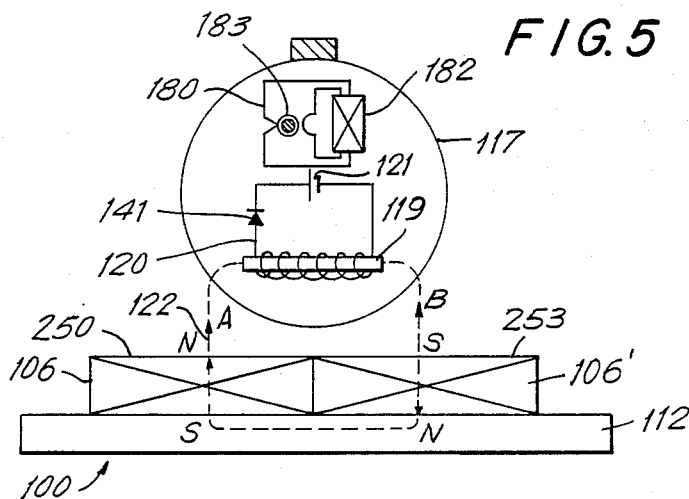
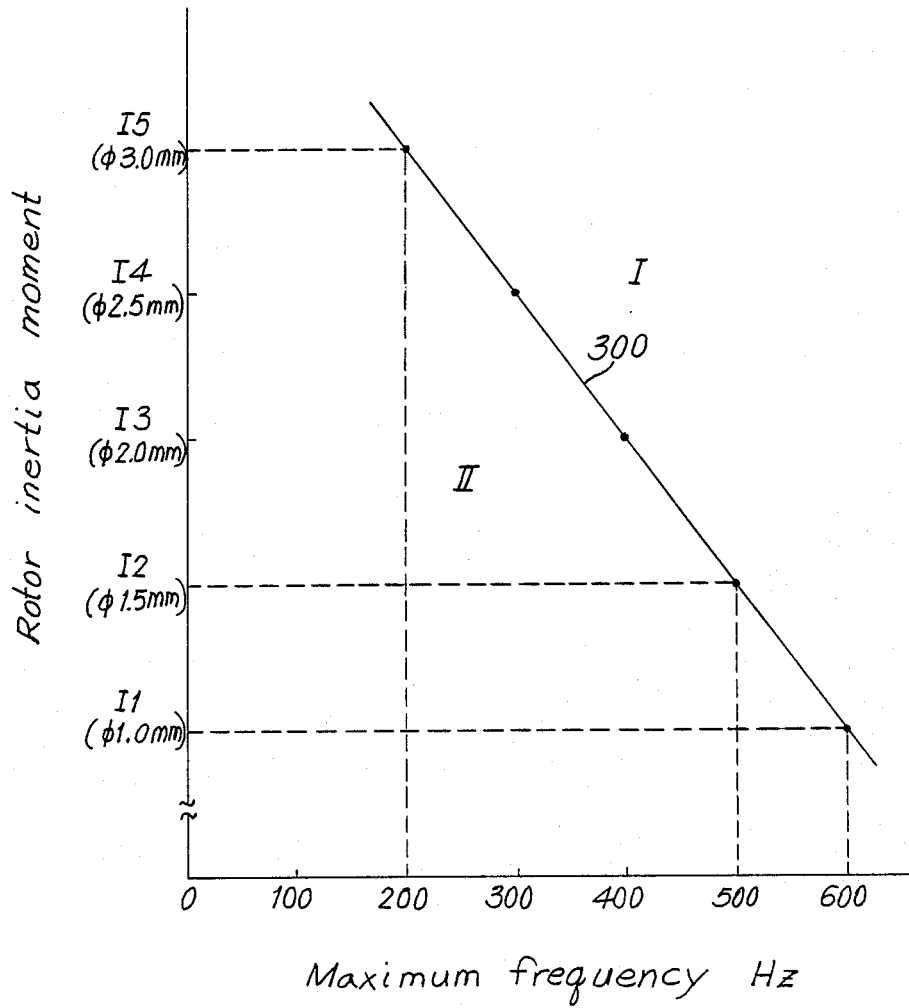


FIG. 6



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.