

United States Patent [19]

Tabata et al.

[54] ELECTRIC MOTOR VEHICLE HAVING MEANS FOR FULLY DISCHARGING PART OF ENERGY STORAGE DEVICE WHEN ENERGY AMOUNT IN THE OTHER PART IS LARGER THAN A THRESHOLD

- [75] Inventors: Atsushi Tabata, Okazaki; Yutaka Taga, Aichi-ken; Ryuji Ibaraki; Tsuyoshi Mikami, both of Toyota, all of Japan
- [73] Assignee: Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
- [21] Appl. No.: 09/013,098
- [22] Filed: Jan. 26, 1998

[30] Foreign Application Priority Data

- Feb. 14, 1997
 [JP]
 Japan
 9-030650

 Aug. 5, 1997
 [JP]
 Japan
 9-210977
- [51] Int. Cl.⁷ B60K 6/00
- [52] U.S. Cl. 180/165

[56] **References Cited**

U.S. PATENT DOCUMENTS

5,121,044 6/1992 Goldman 320/2

US006158541A

[11] Patent Number: 6,158,541

[45] **Date of Patent:** Dec. 12, 2000

5,184,058	2/1993	Hesse et al 320/4
5,680,908	10/1997	Reed 180/65.3
5,769,177	6/1998	Wickman 180/65.3
5,905,371	5/1999	Limpaecher 323/288

FOREIGN PATENT DOCUMENTS

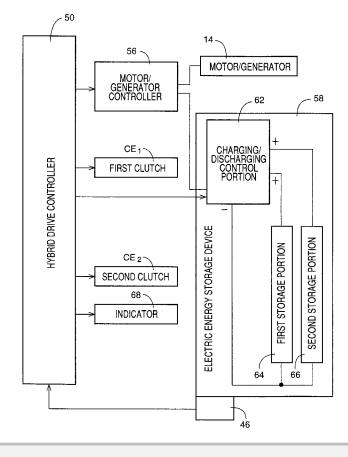
5-137269	6/1993	Japan .
5-328526	12/1993	Japan .

Primary Examiner—Kevin Hurley Assistant Examiner—Kevin McKinley Attorney, Agent, or Firm—Oliff & Berridge, PLC

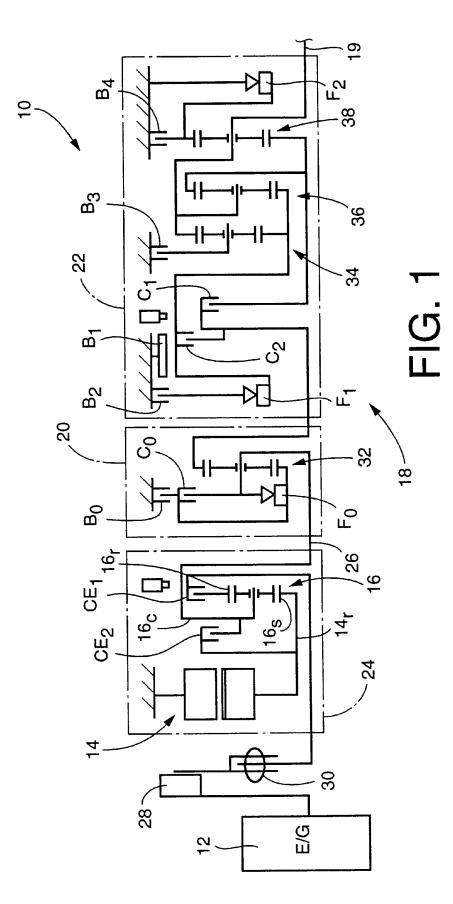
[57] ABSTRACT

An electrically driven automotive vehicle including an electric motor for driving the vehicle, an electric energy storage device for storing an electric energy for operating the electric motor, the storage device having a plurality of storage portions which can be charged and discharged independently of each other, and a fully discharging device for fully discharging at least one of the storage portions, when an amount of electric energy stored in at least one of the other of the storage portions is larger than a predetermined threshold.

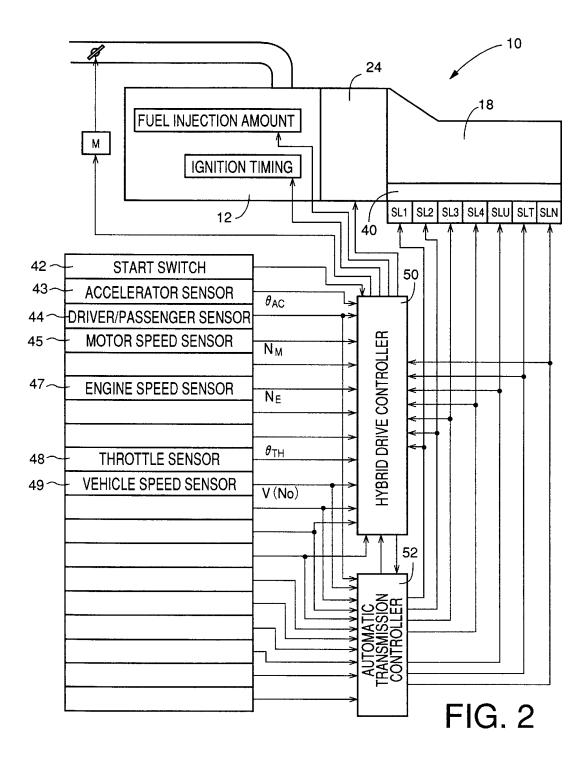
26 Claims, 28 Drawing Sheets



ARM Find authenticated court documents without watermarks at <u>docketalarm.com</u>.



Α



DOCKET RM Α Find authenticated court documents without watermarks at docketalarm.com.

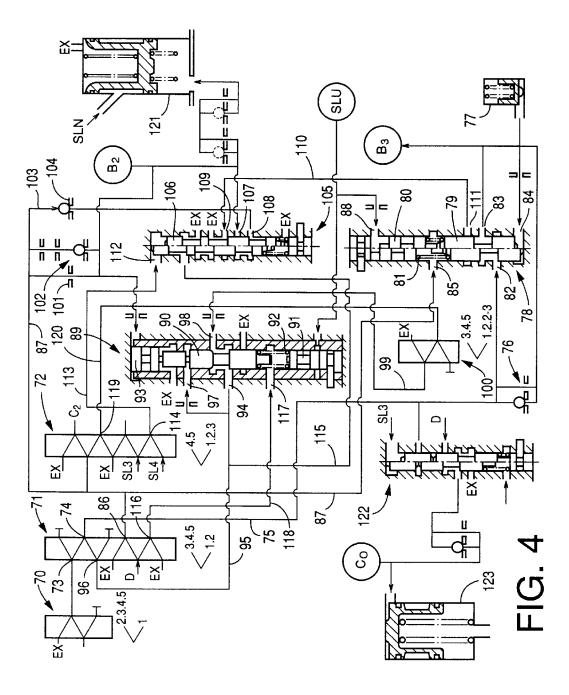
U.S.	Patent

SPEED RATIO 0.753 3.357 2.180 1.424 1.000 -4.5502 \bigcirc ONE-WAY CLUTCHES Щ - \bigcirc ш 0 \bigcirc О \bigcirc \bigcirc \bigcirc ц. 4 \bigcirc ш ო \bigcirc Ш BRAKES 2 \bigcirc \bigcirc \bigcirc ш -മ 0 \bigcirc Ш C_2 Ο \bigcirc \bigcirc **CLUTCHES** ပ် \bigcirc О \bigcirc \bigcirc \bigcirc ပိ О \bigcirc Ο ()()**TRANSMISSION** р Rev 5 th Б ÷ st Z 2 ო 4 -NEUTRAL REVERSE SHIFT LEVER DRIVE

FIG. 3

ΟСКЕТ

Α



DOCKET A L A R M Find authenticated court documents without watermarks at <u>docketalarm.com</u>.

DOCKET A L A R M



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.