

(12) **United States Patent**  
**Maienschein et al.**

(10) **Patent No.:** **US 6,244,401 B1**  
 (45) **Date of Patent:** **Jun. 12, 2001**

(54) **FORCE TRANSMITTING APPARATUS**

(75) Inventors: **Stephan Maienschein, Bühl; Marc Meisner, Bühl** Weitenung; **Rudolf Hönemann, Ottersweier**, all of (DE)

(73) Assignee: **LuK Getriebe-Systeme GmbH**, Buhl/Baden (DE)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

4,347,717 \* 9/1982 Lamarche ..... 192/213.1 X  
 5,667,042 \* 9/1997 Olsen et al. .... 192/3.29  
 5,975,261 \* 11/1999 Woerner et al. .... 192/3.29

\* cited by examiner

*Primary Examiner*—Richard M. Lorence

(74) *Attorney, Agent, or Firm*—Darby & Darby

(57) **ABSTRACT**

A torque-transmitting apparatus for motor vehicles includes a hydrokinetic torque converter with a housing connected to the driving shaft of an engine. The housing contains a pump and a turbine, the latter arranged to drive an input shaft of a power train. At least one damper is arranged in the power flow path between the turbine and a rotary output element of the apparatus. The damper has an input member constrained to rotate with the turbine and an output member connected to the rotary output element. The input member and the output member are rotatable relative to each other against the opposing forces of energy-storing devices arranged between the input member and the output member. The input member has a radially outer portion in form-locking engagement with the turbine.

(21) Appl. No.: **09/305,504**

(22) Filed: **May 5, 1999**

(30) **Foreign Application Priority Data**

May 6, 1998 (DE) ..... 198 20 128  
 Jun. 18, 1998 (DE) ..... 198 27 127

(51) **Int. Cl.**<sup>7</sup> ..... **F16H 45/02**

(52) **U.S. Cl.** ..... **192/3.3; 192/70.17; 192/213.1; 464/66**

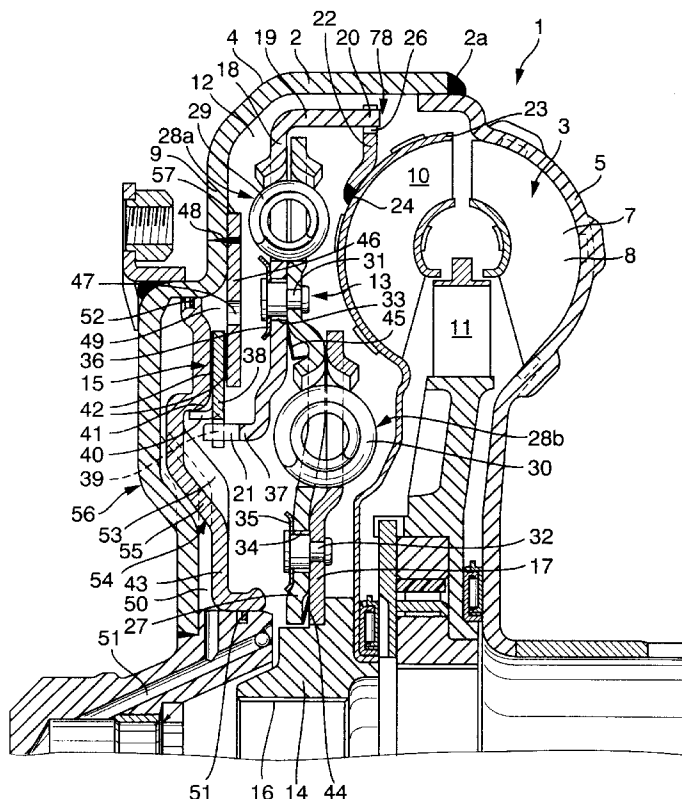
(58) **Field of Search** ..... 192/3.28, 3.29, 192/3.3, 70, 17, 212, 213, 213.1; 464/66, 67

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

4,138,003 \* 2/1979 Malloy ..... 192/3.29

**49 Claims, 11 Drawing Sheets**



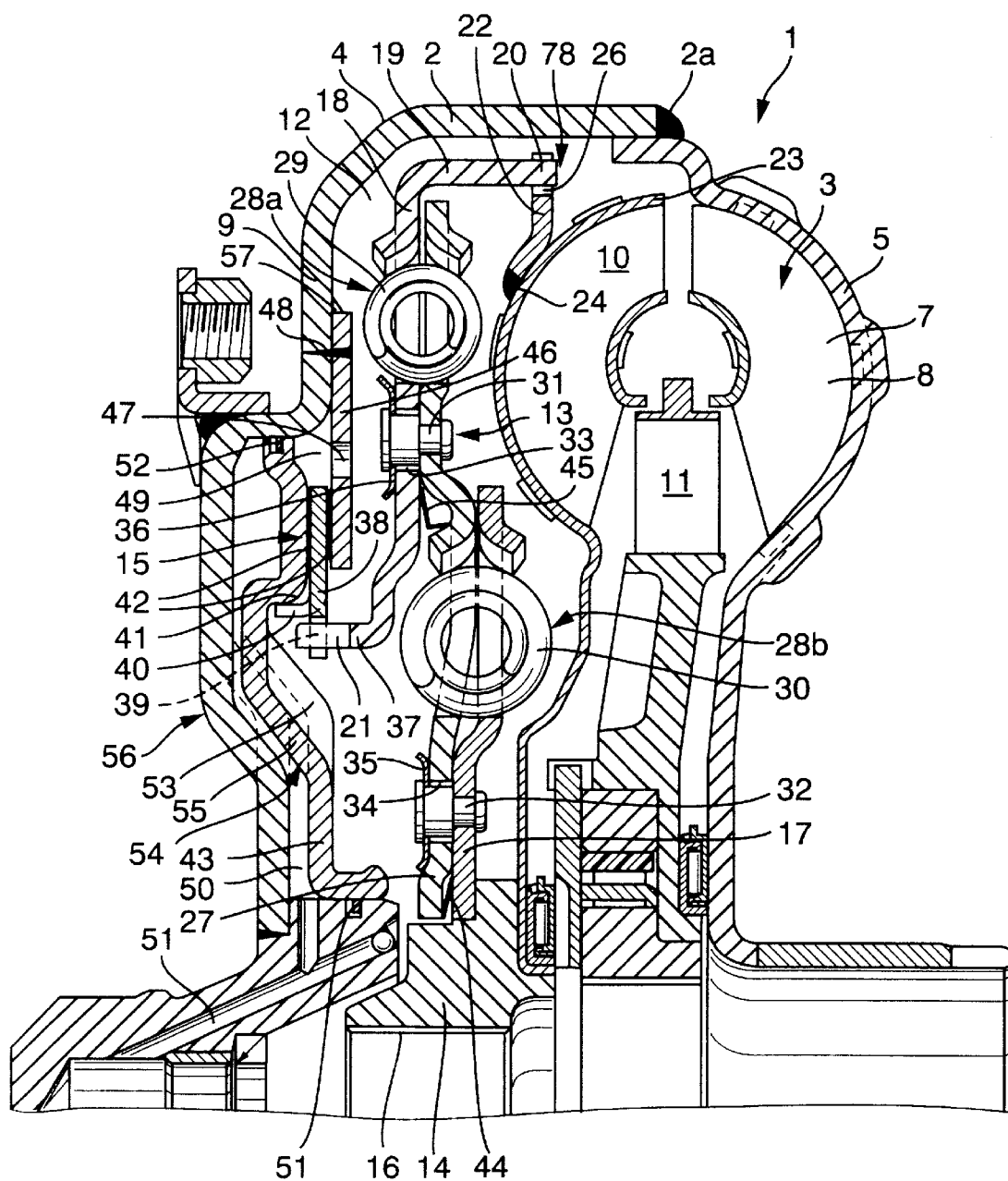


Fig. 1

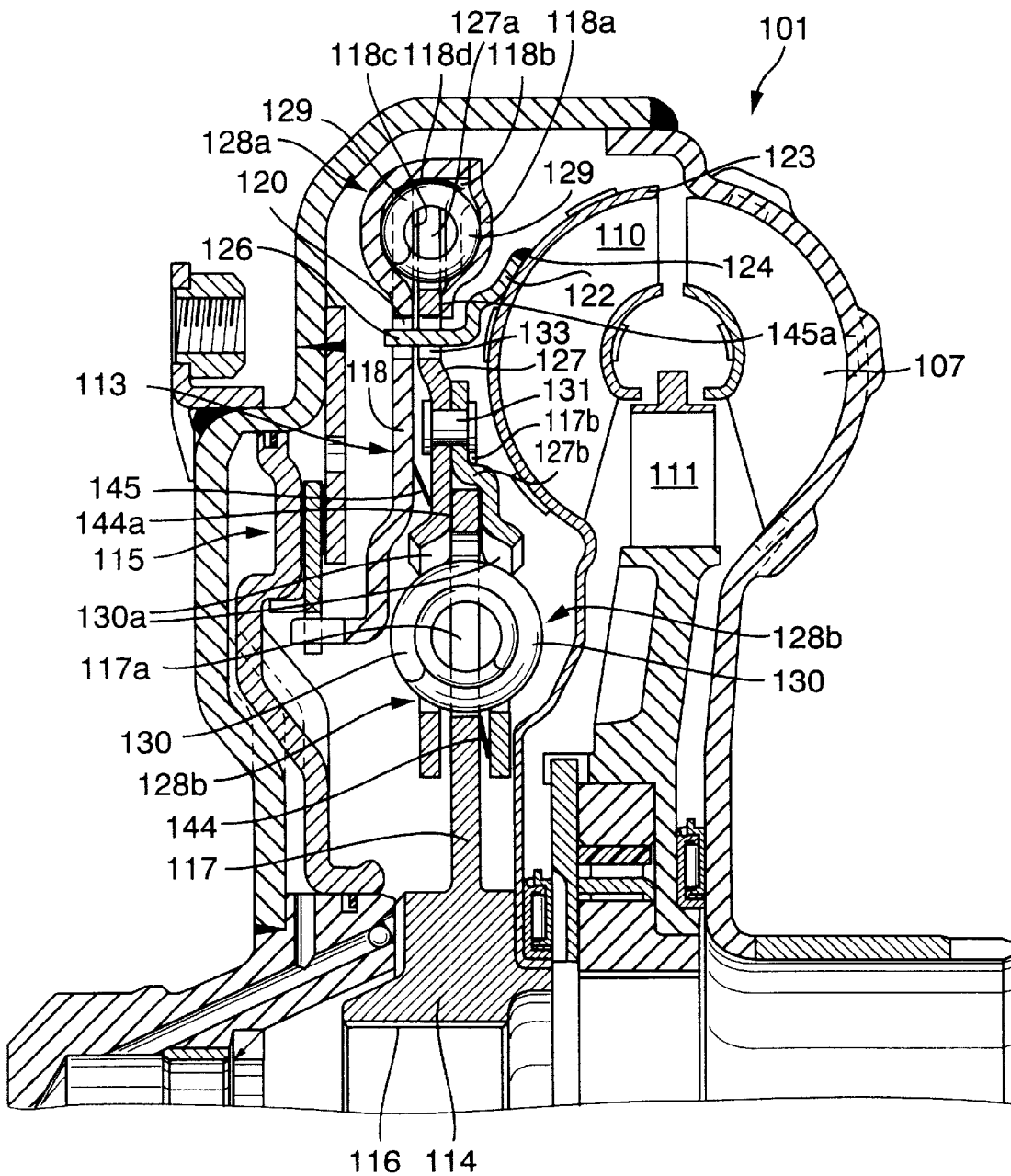


Fig. 2

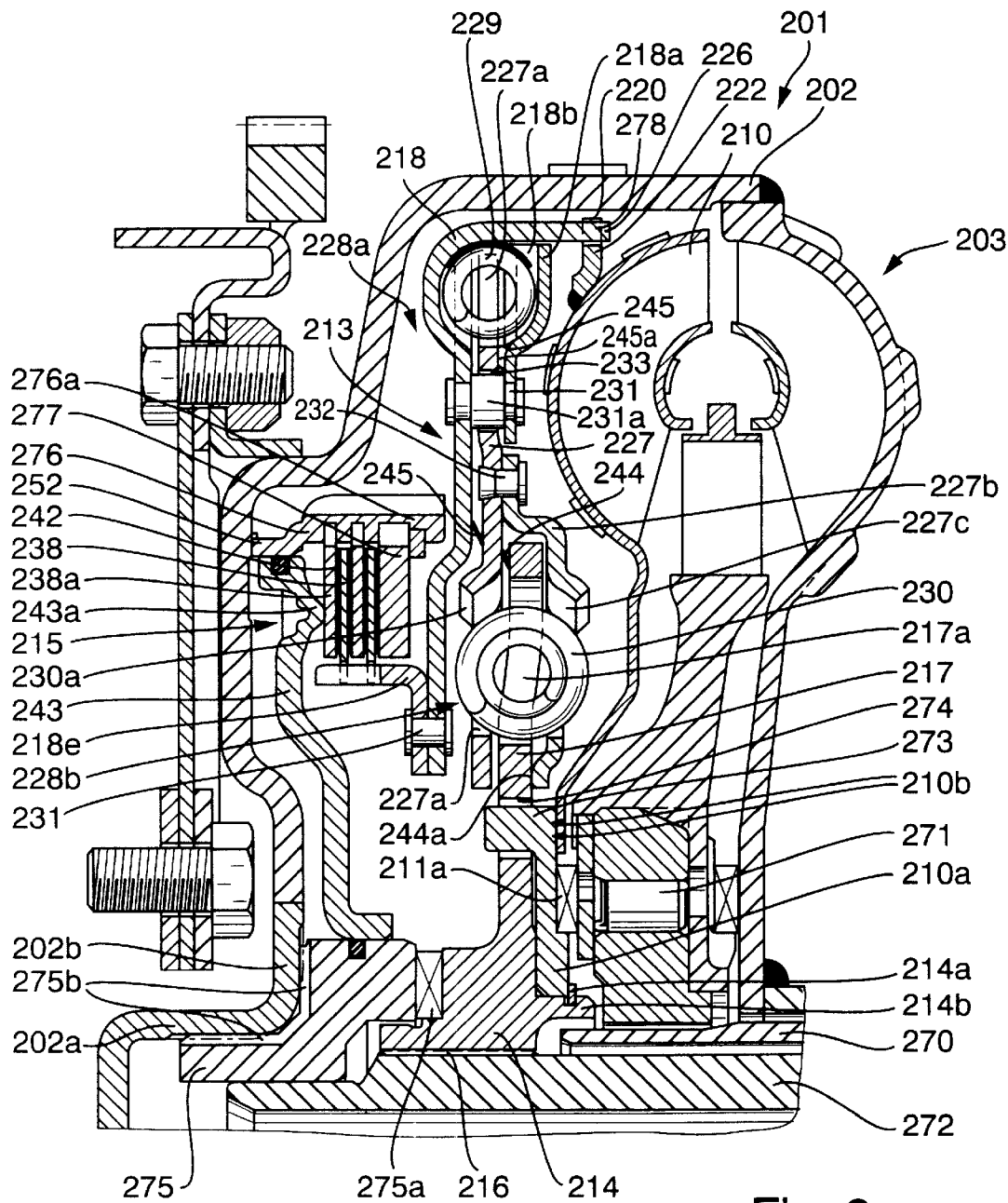


Fig. 3

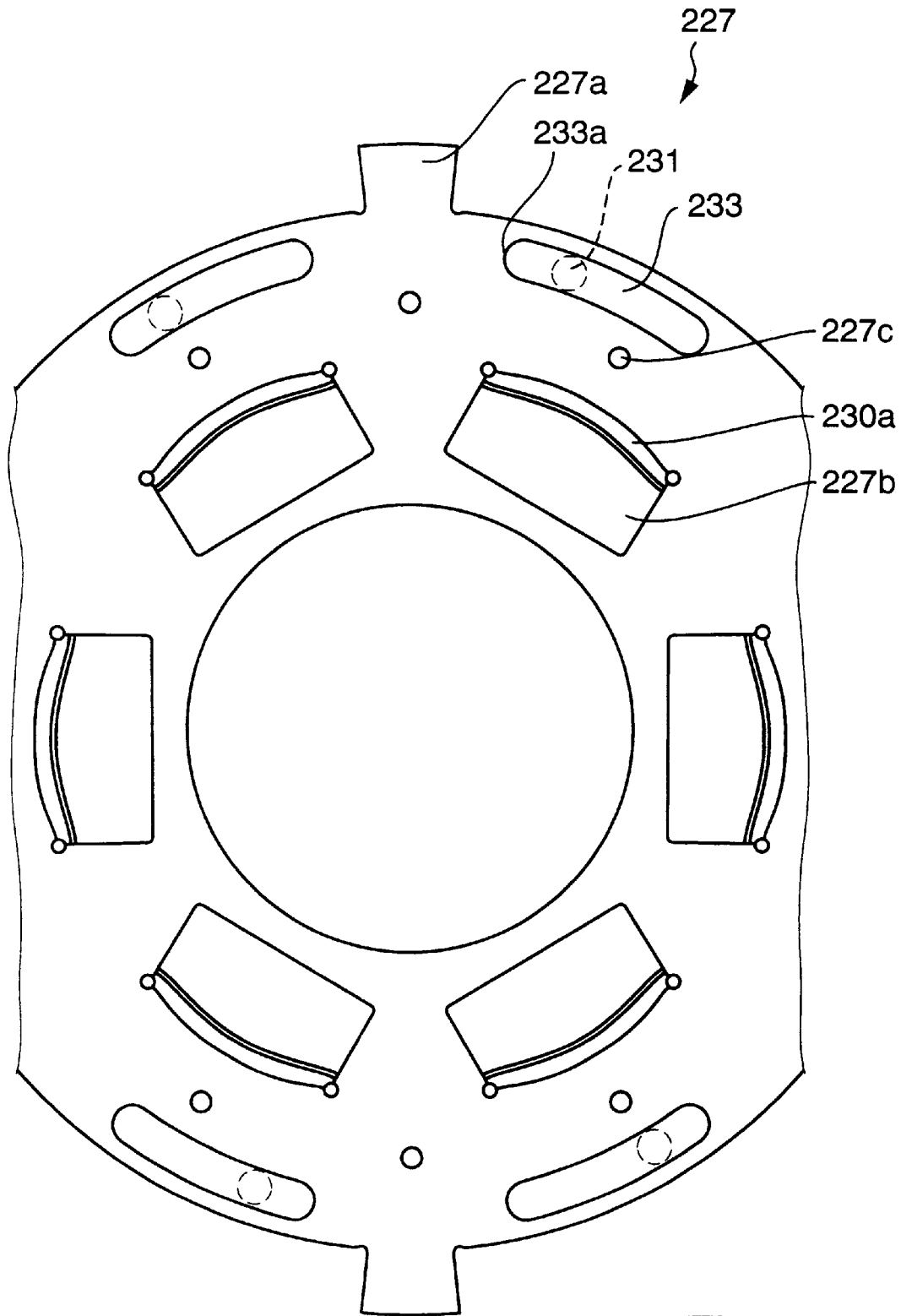


Fig. 4

# 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.