



US 20070205067A1

(19) **United States**

(12) **Patent Application Publication**

Frey et al.

(10) **Pub. No.: US 2007/0205067 A1**

(43) **Pub. Date: Sep. 6, 2007**

(54) **HYDRODYNAMIC CLUTCH DEVICE**

Publication Classification

(75) Inventors: **Peter Frey**, Gerolzhofen (DE); **Michael Heuler**, Wurzburg (DE); **Edgar Reinhardt**, Hofheim (DE); **Bernd Reinhardt**, Schonungen (DE); **Stefan Mundt**, Wurzburg (DE); **Thomas Baier**, Bergheinfeld (DE); **Frank Zerner**, Bischberg (DE)

(51) **Int. Cl.**
F16H 45/02 (2006.01)

(52) **U.S. Cl.** **192/3.3**

(57) **ABSTRACT**

A hydrodynamic clutch includes a housing which can be brought into working connection with a drive; a hydrodynamic circuit formed by a pump wheel and a turbine wheel; a torsional vibration damper having a drive side transmission element, a takeoff side transmission element, and at least one energy storage group between the transmission elements; and a bridging clutch including first friction elements connected to the housing and second friction elements connected to the drive side transmission element. A first flow route extends from a first flow passage to the friction elements, and a second flow route extends from the hydrodynamic circuit to a second flow passage. A sealing arrangement cooperates with the drive side transmission element to separate the first flow route from the second flow route.

Correspondence Address:

COHEN, PONTANI, LIEBERMAN & PAVANE
551 FIFTH AVENUE, SUITE 1210
NEW YORK, NY 10176

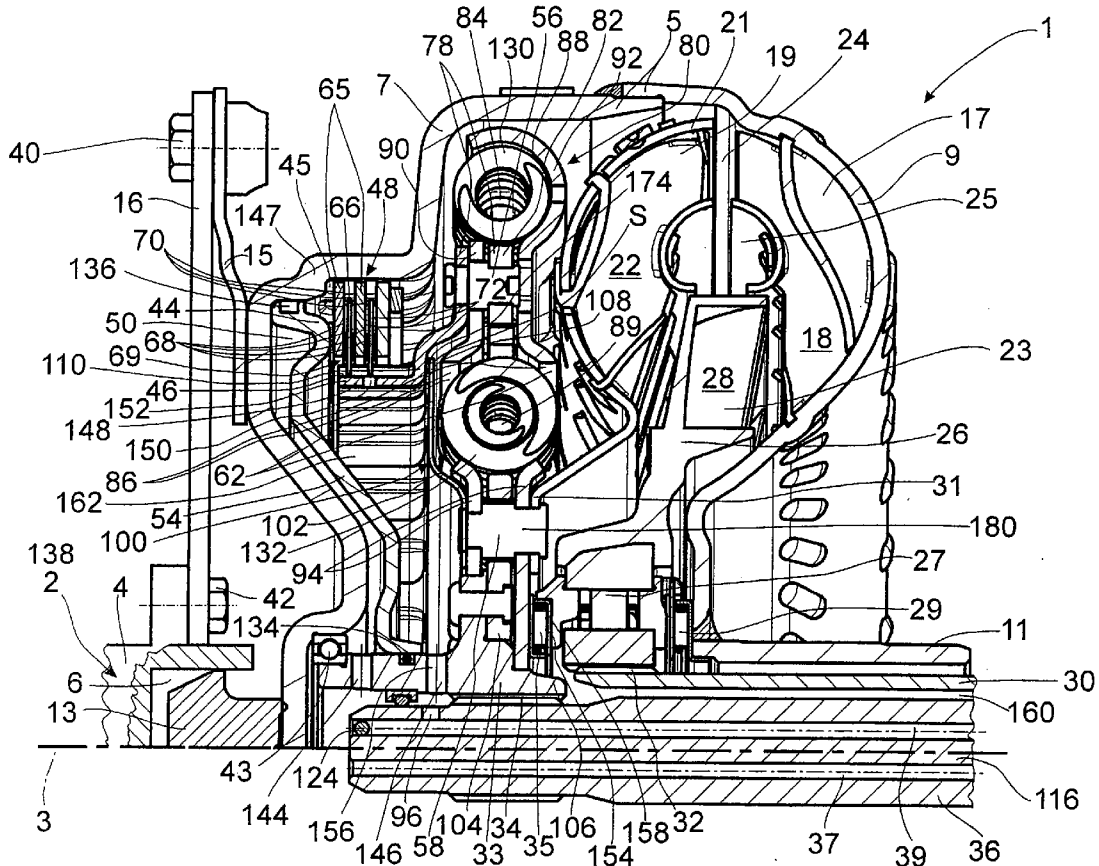
(73) Assignee: **ZF Friedrichshafen AG**,
Friedrichshafen (DE)

(21) Appl. No.: **11/711,289**

(22) Filed: **Feb. 27, 2007**

(30) **Foreign Application Priority Data**

Mar. 3, 2006 (DE) 10 2006 009 987.7



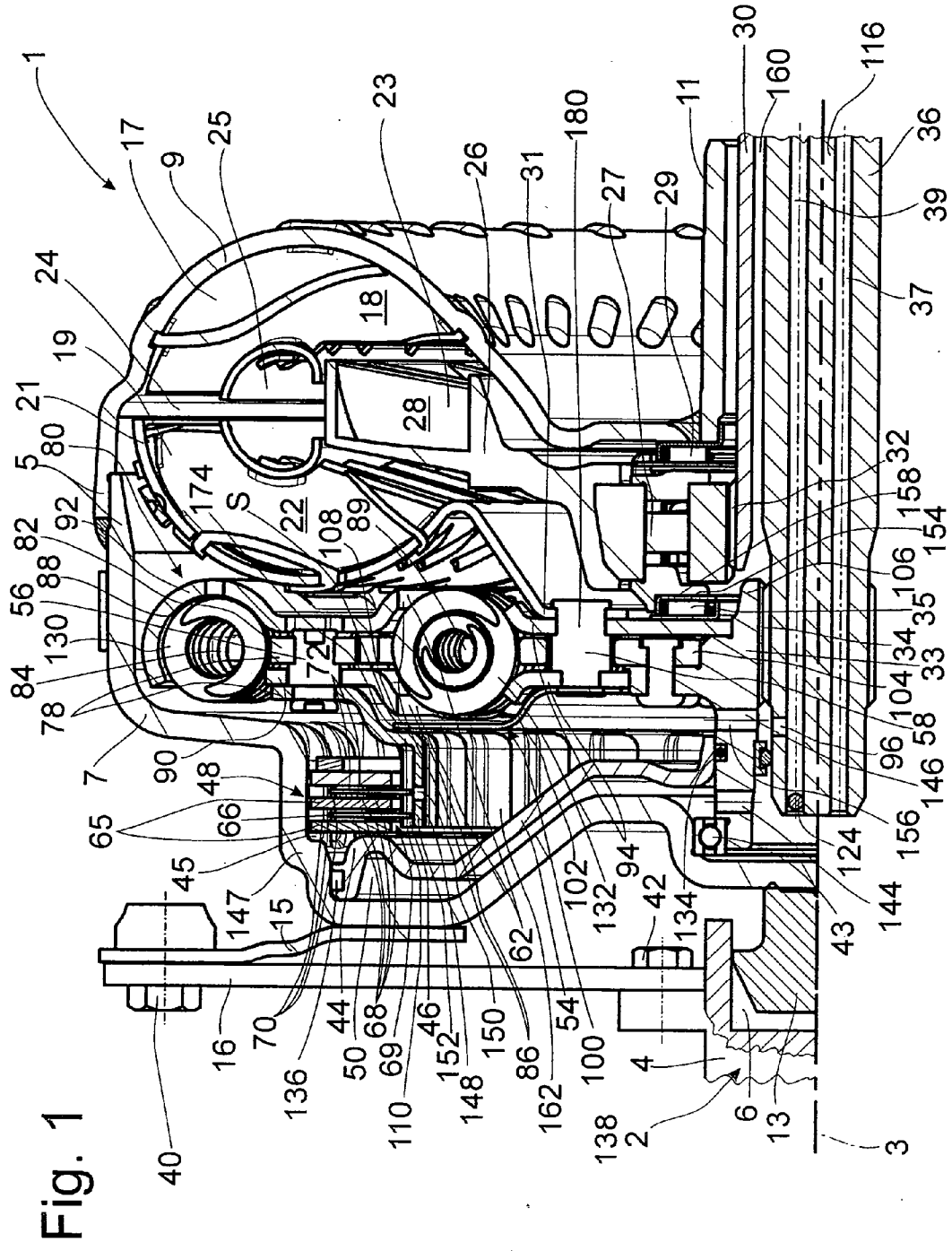


Fig. 1

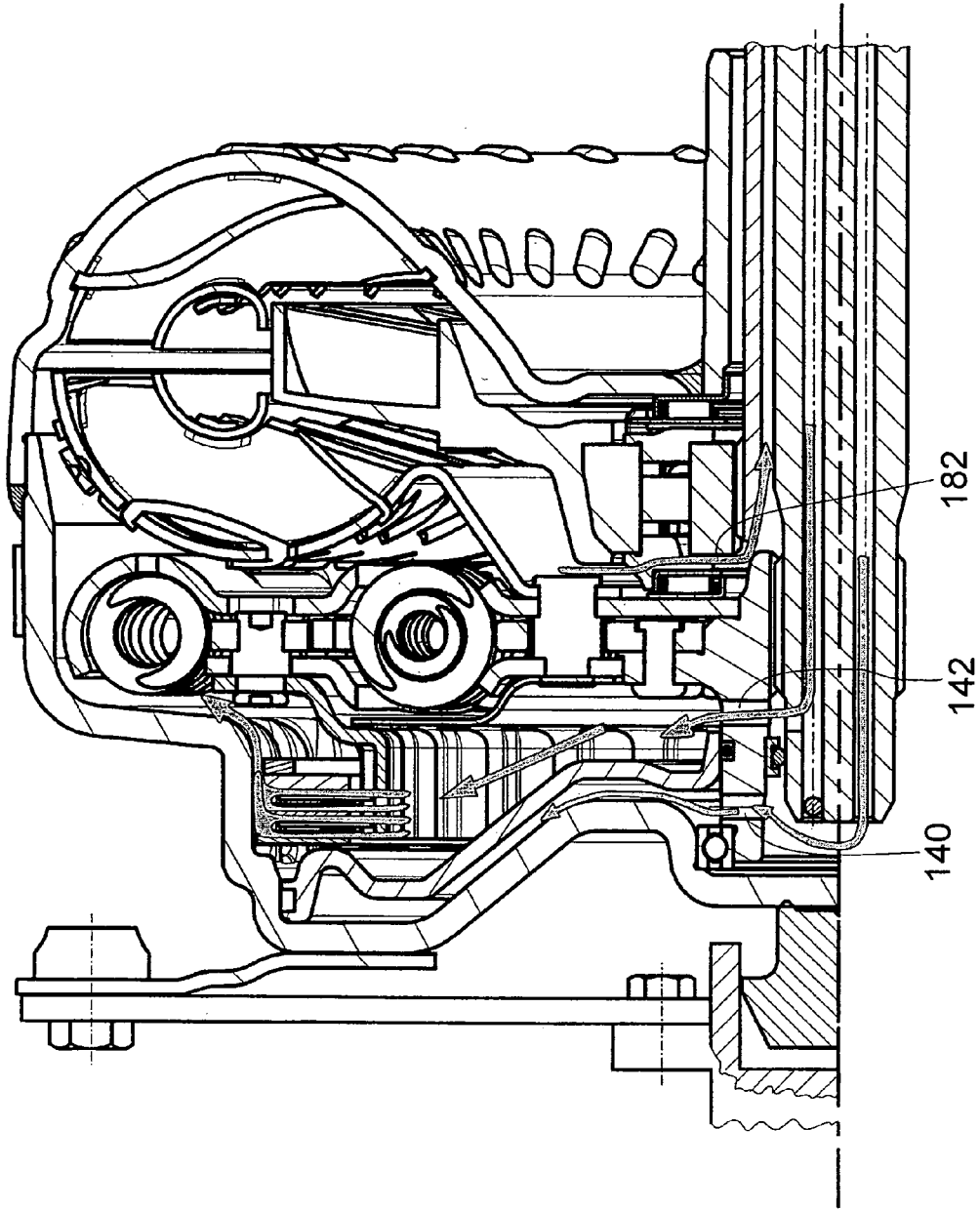


Fig. 2

Fig. 3

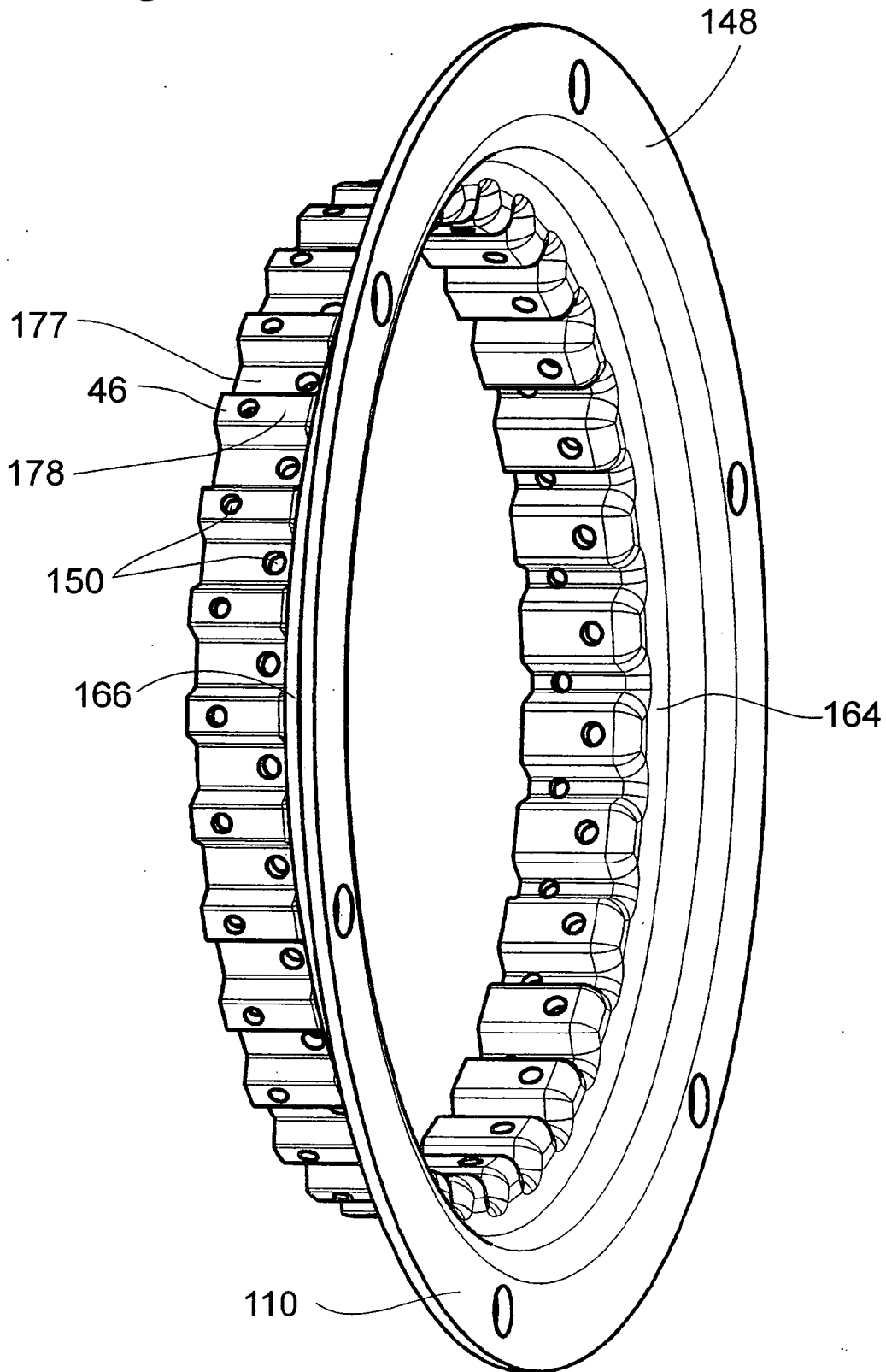
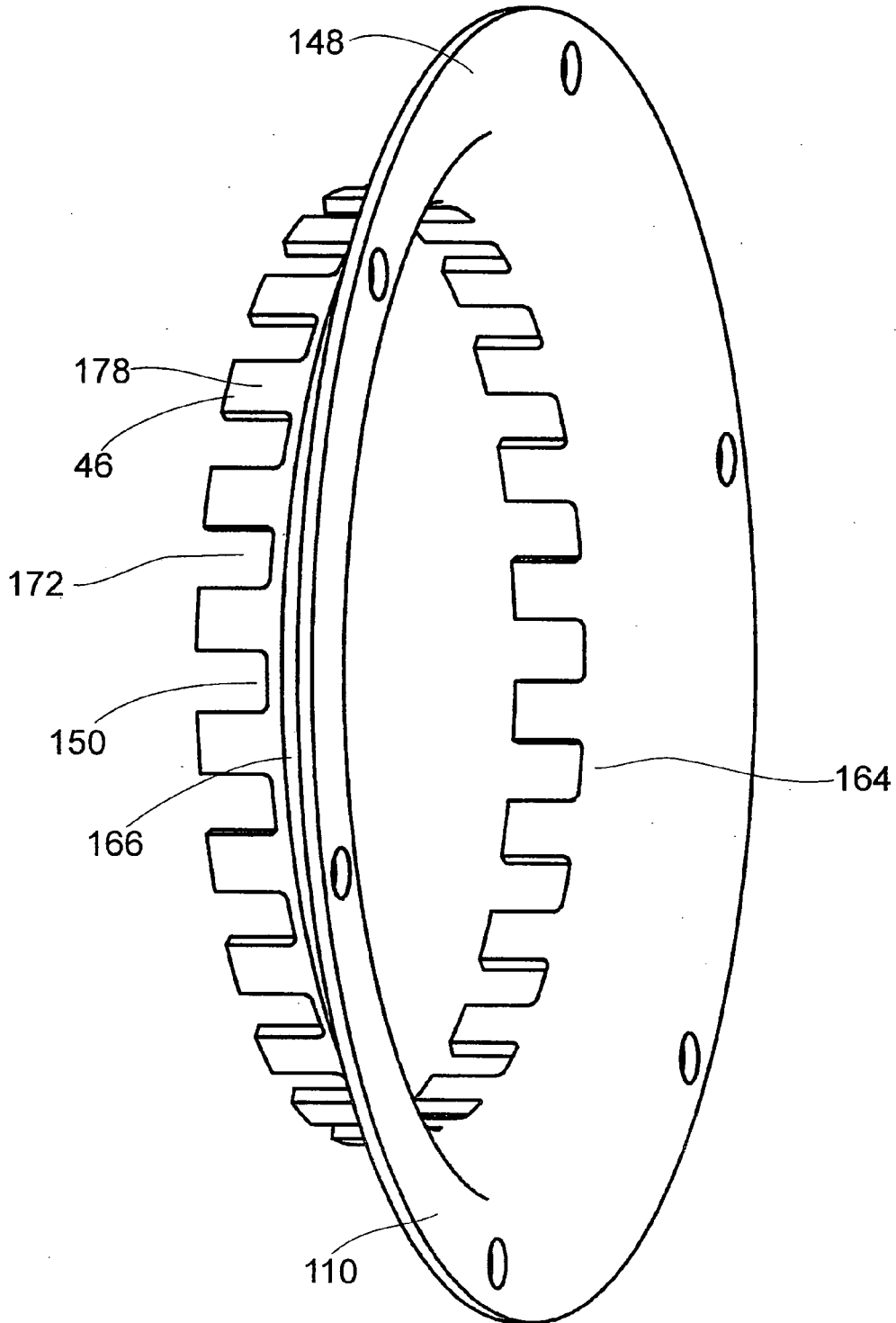


Fig. 4



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.