

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

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(54) **FORCE TRANSMITTING APPARATUS**

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* cited by examiner

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

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(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.**⁷ **F16H 45/02**

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

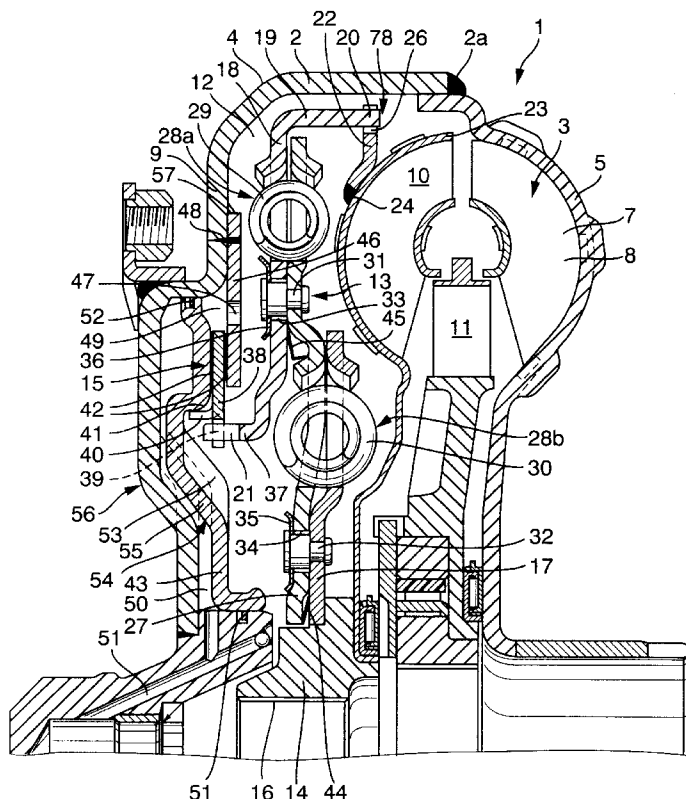
(58) **Field of Search** 192/3.28, 3.29, 192/3.3, 70, 17, 212, 213, 213.1; 464/66, 67

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49 Claims, 11 Drawing Sheets



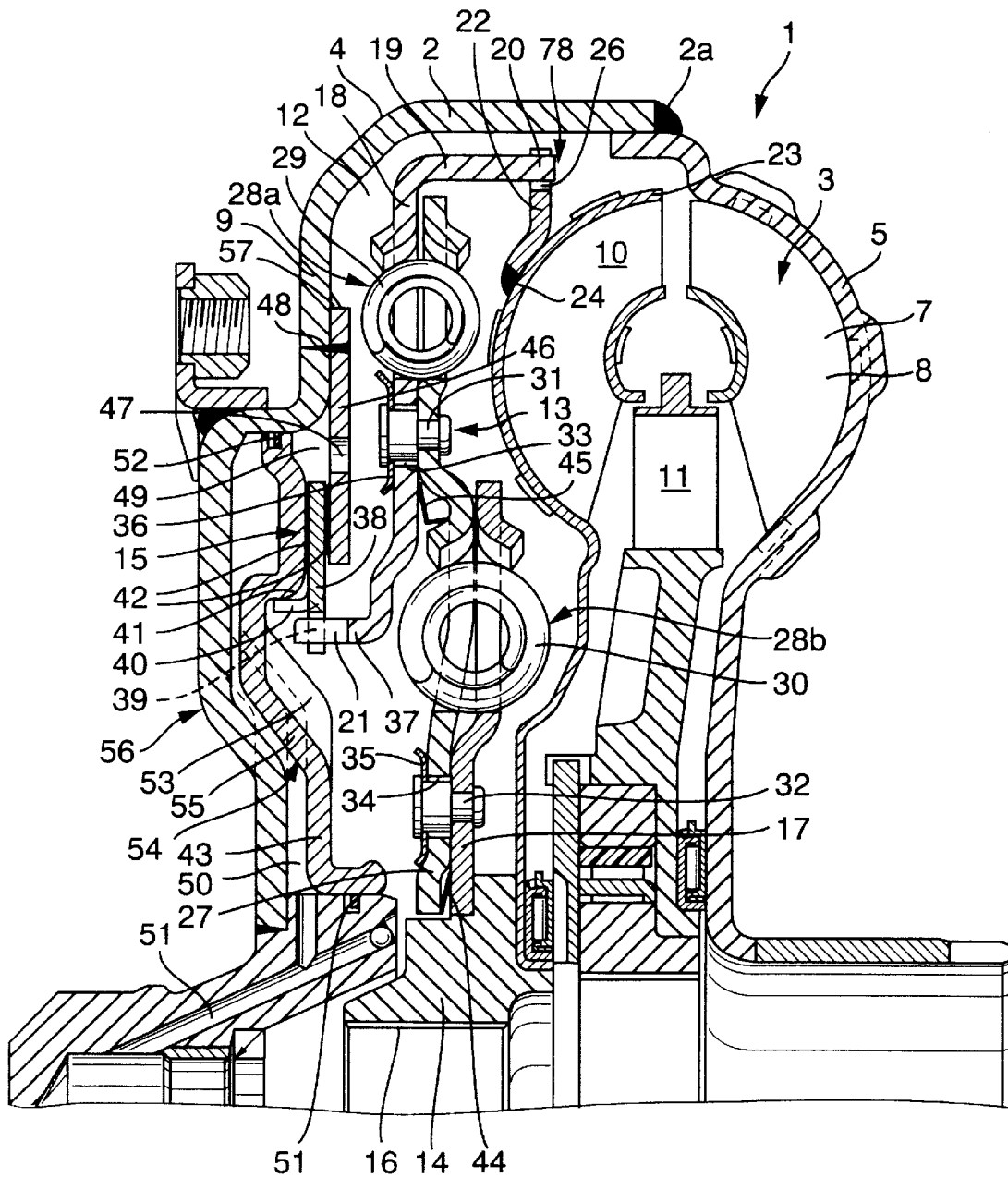


Fig. 1

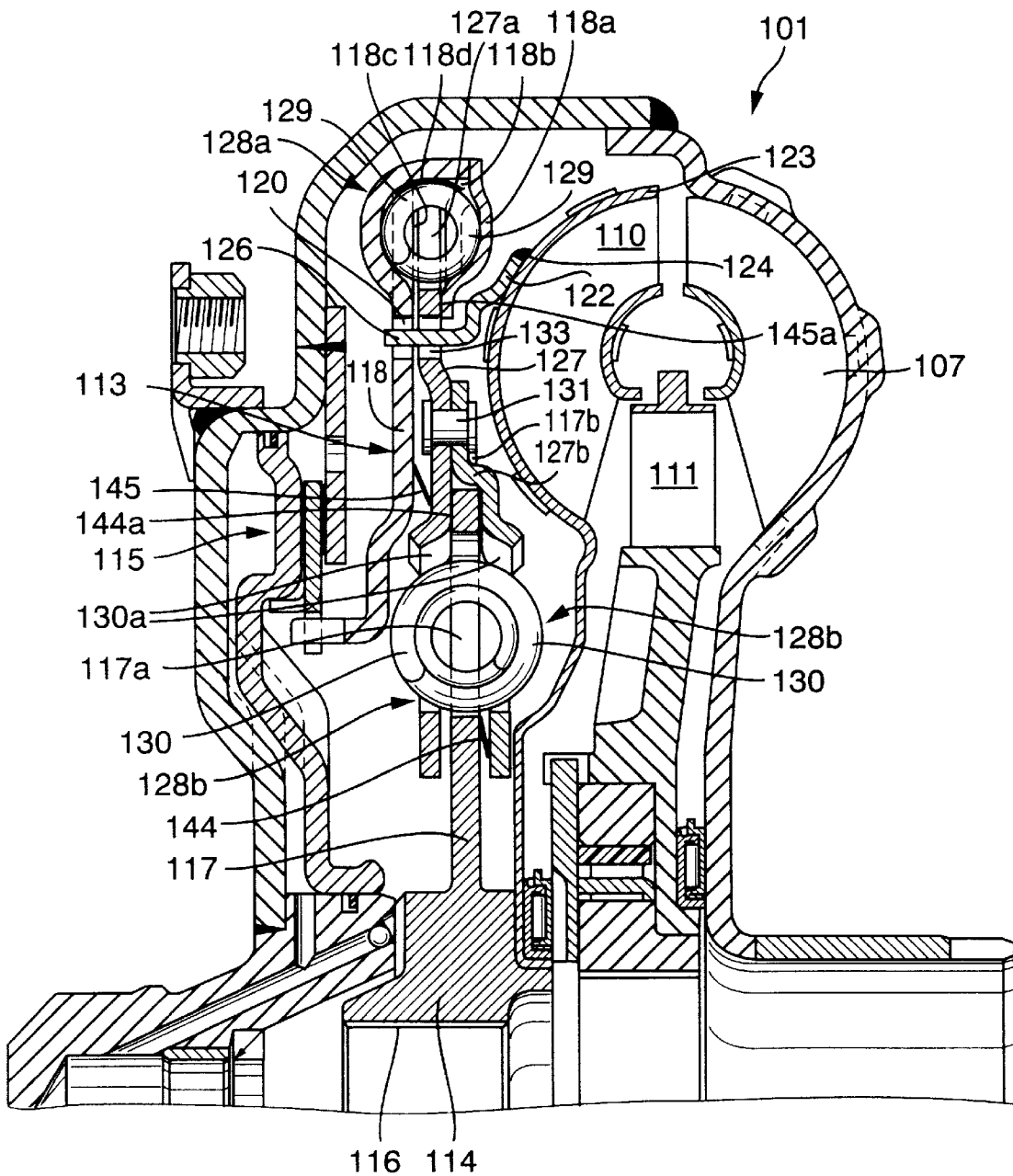


Fig. 2

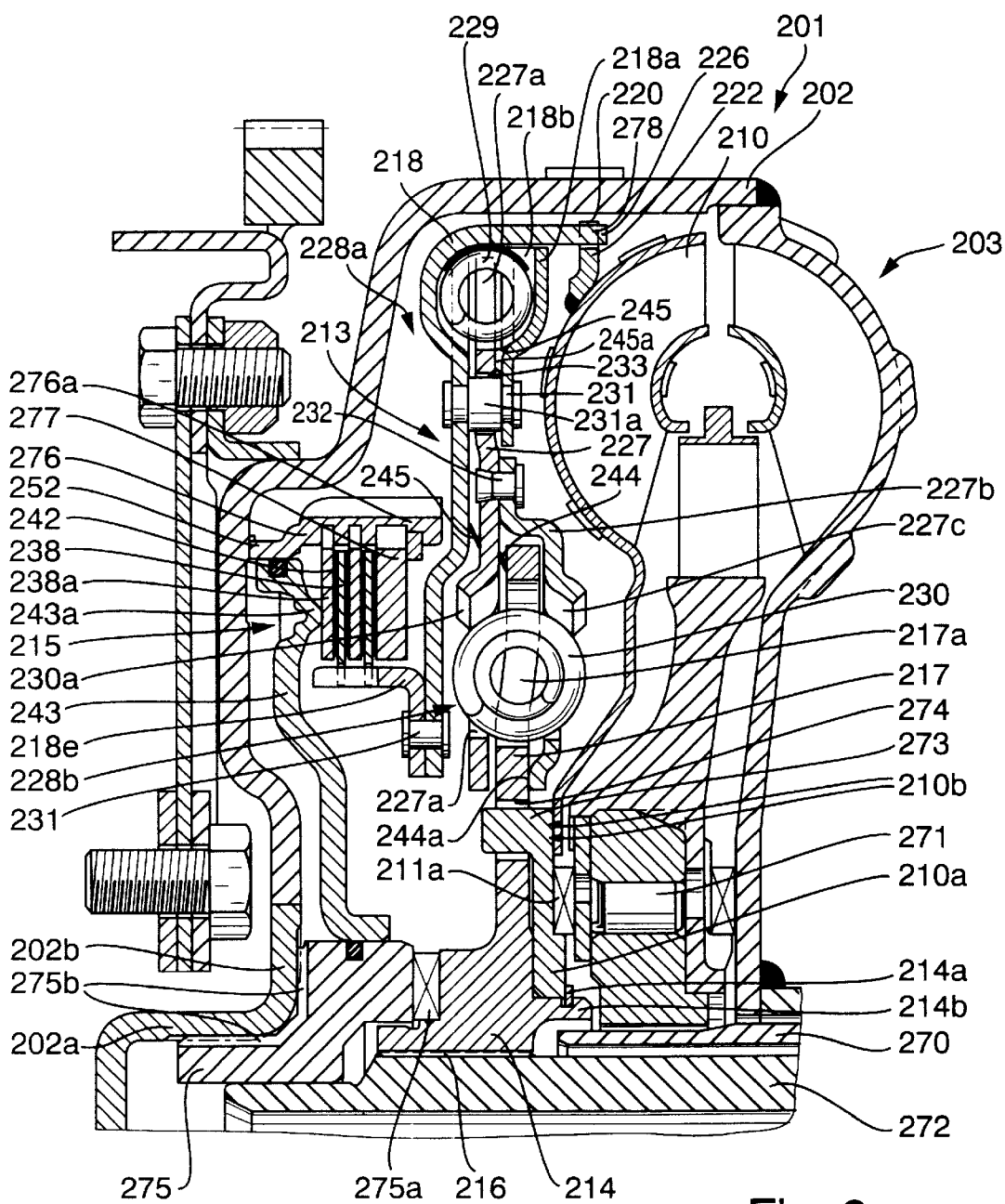


Fig. 3

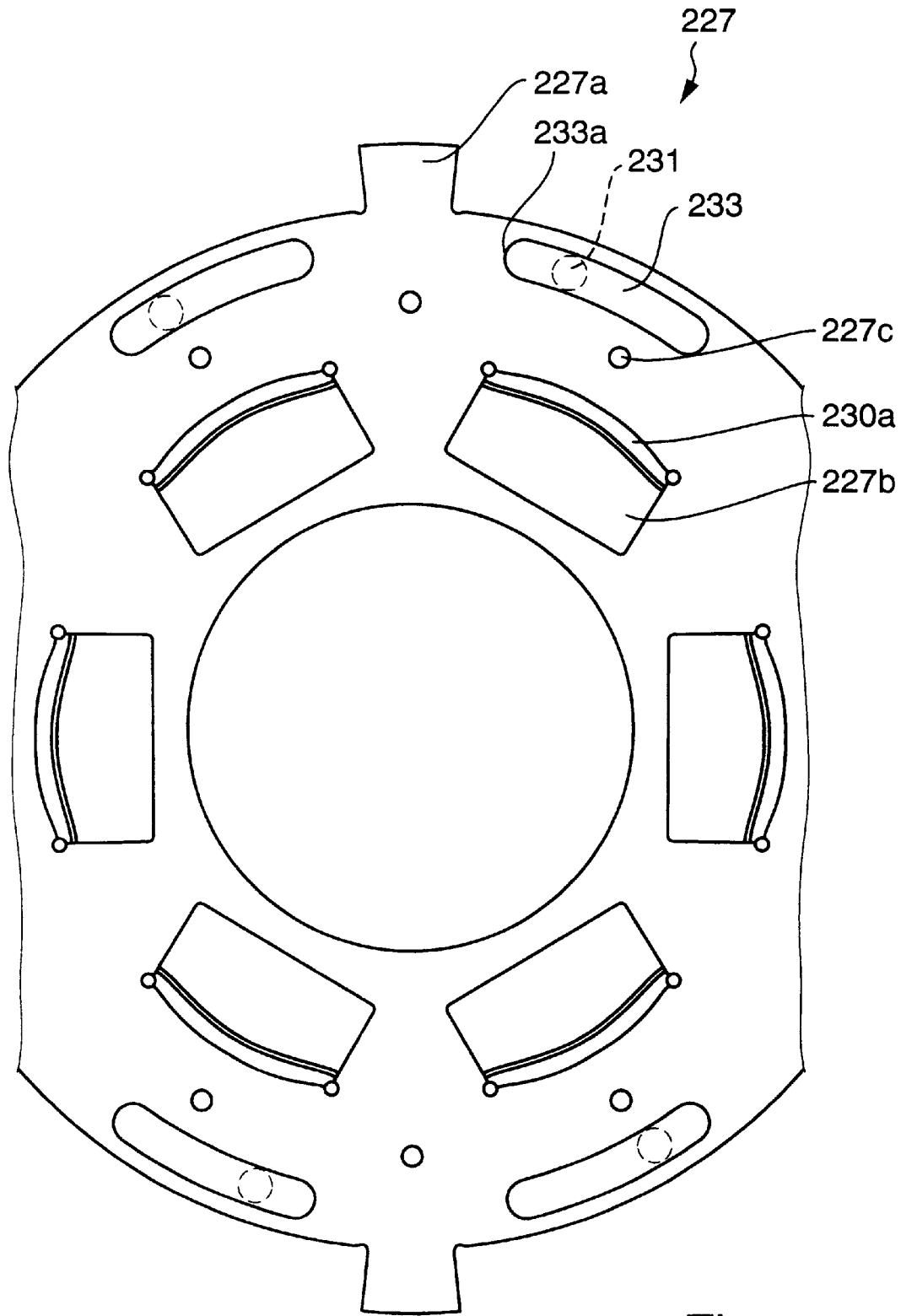


Fig. 4

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