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(US). TAYLOR, Danny R. [US/US]; 32 Upper Creek Road, Freeville, New York 13068 (US).

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(74) Agents: WOOD, Lynda M. et al.; BorgWarner Inc., c/o Brown & Michaels, PC, 400 M & T Bank Bldg. 118 North Tioga Street, Ithaca, NY 14850 (US).

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(71) Applicant (for all designated States except US): BORG-WARNER INC [US/US]; 3850 Hamlin Road, Auburn Hills, Michigan 48326 (US).

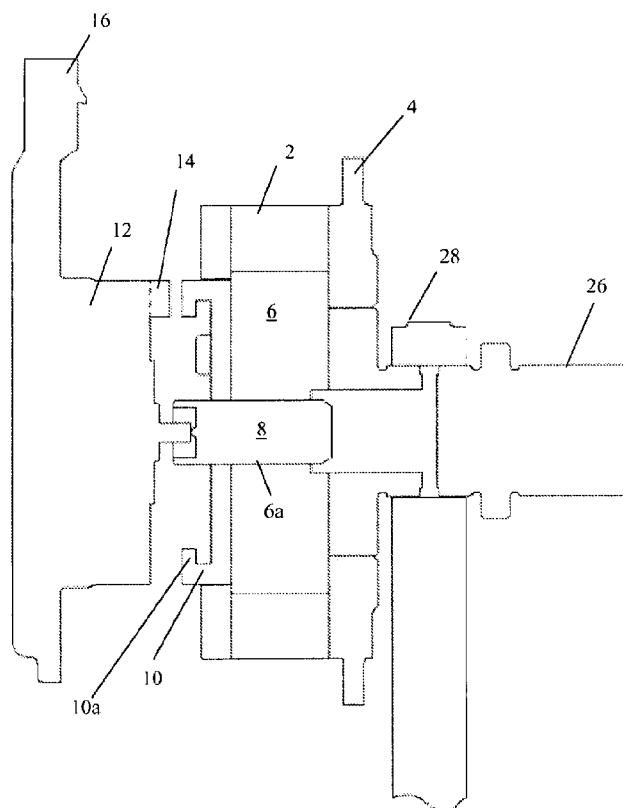
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(72) Inventors; and
(75) Inventors/Applicants (for US only): SIMPSON, Roger T. [US/US]; 29 Woodlane Road, Ithaca, New York 14850

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(54) Title: VARIABLE FORCE SOLENOID WITH INTEGRATED POSITION SENSOR



(57) Abstract: A phaser for an engine having at least one camshaft comprising a housing, a rotor, a control valve, an actuator, and a pulse wheel. The rotor connects to a camshaft coaxially located within the housing. The housing and the rotor define at least one vane separating a chamber in the housing. The vane is capable of rotation to shift the relative angular position of the housing and the rotor. The control valve is received by the rotor and directs fluid to the chambers of the phaser. The actuator positions the control valve and has at least one integrated position sensor, such that electrical connections for the actuator and the integrated position sensor are made through one connection, decreasing leakage of fluid from the phaser. A pulse wheel is mounted on the phaser for rotation therewith and in alignment with the integrated position sensor of the actuator.



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FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL,
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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005/072391 A1 (GREEN JOHN C [US] ET AL) 7 April 2005 (2005-04-07) paragraphs [0003] - [0043]; figures 1-8	1-7
X	EP 1 357 261 A (BORG WARNER INC [US]) 29 October 2003 (2003-10-29) paragraph [0026]; claim 9	5
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☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Hernandez Serna, J

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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