

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
17 August 2006 (17.08.2006)

PCT

(10) International Publication Number
WO 2006/086704 A3

(51) International Patent Classification:
F16H 3/00 (2006.01)

(21) International Application Number:
PCT/US2006/004872

(22) International Filing Date:
10 February 2006 (10.02.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/651,804 10 February 2005 (10.02.2005) US
60/738,935 22 November 2005 (22.11.2005) US

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

(72) Inventor; and

(75) Inventor/Applicant (for US only): **BRAFORD, Thomas, E.** [US/US]; 10175 Newfound Gap, Brighton, MI 48114 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

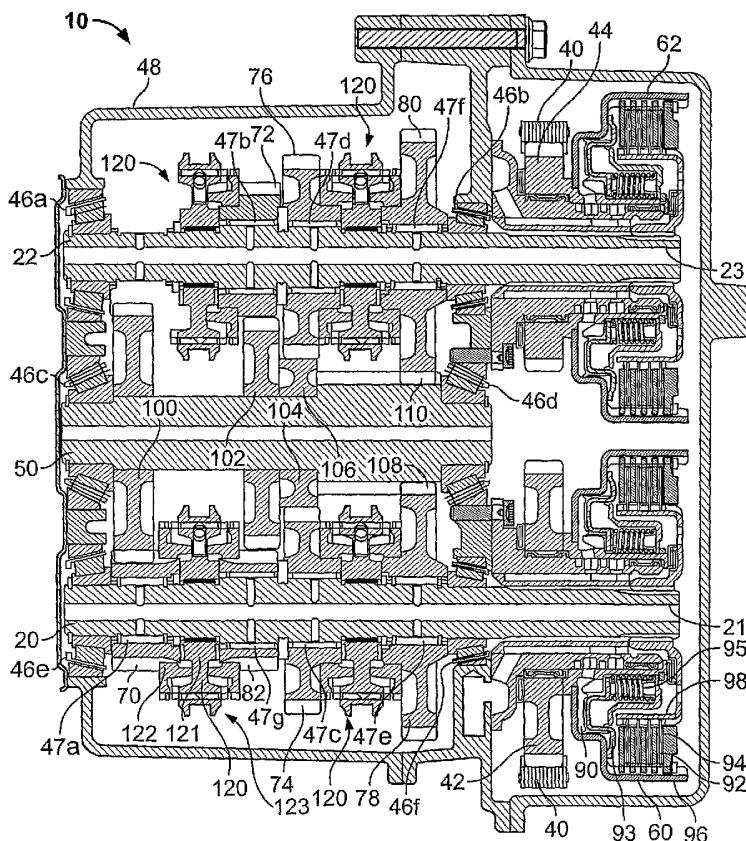
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

[Continued on next page]

(54) Title: POWER FLOW CONFIGURATION FOR DUAL CLUTCH TRANSMISSION MECHANISM



(57) Abstract: A transmission mechanism with a pair of selectively engageable clutch systems is disclosed that has an upstream gear ratio and a downstream gear ratio that combine to provide an effective gear ratio. A different clutch drive member (42, 44) is associated with an input side of each of the pair of clutch systems. The clutch drive members are driven for rotation by an engine input member (26). The upstream gear ratio is determined by the gear ratio between the engine input member and one of the clutch drive members (42, 44). Output sides of each of the clutch systems drive an associated one of a pair of non-coaxial layshafts (20, 22). Pinions are located on and selectively driven by the layshafts. A countershaft is spaced from both of the layshafts, and has a plurality of gears. Each of the gears is driven for rotation by one of the pinions of the layshafts. The downstream gear ratio is determined by the gear ratio between the selected pinion and the intermeshed gear.



(88) Date of publication of the international search report:

23 November 2006

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/004872

A. CLASSIFICATION OF SUBJECT MATTER

INV. F16H3/00

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)
F16H

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)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 36 21 545 A1 (TROPP, AXEL, DIPL.-ING; SIENCNIK, LUKAS) 28 January 1988 (1988-01-28)	1-4, 6-13, 15-32
Y	the whole document	5, 14
X	EP 0 797 025 A (LANDINI SPA) 24 September 1997 (1997-09-24)	1-4, 6-13, 15-32
Y	the whole document	5, 14
A	EP 0 987 467 A (DAIMLERCHRYSLER CORPORATION) 22 March 2000 (2000-03-22)	23-25
Y	the whole document	5
Y	US 2 697 367 A (WINTHER MARTIN P) 21 December 1954 (1954-12-21) abstract; figure 10	14



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

31 July 2006

Date of mailing of the international search report

09/08/2006

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Masset, C-I

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2006/004872

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 3621545	A1	28-01-1988	NONE	
EP 0797025	A	24-09-1997	AT 206805 T CA 2200483 A1 DE 69707179 D1 IT RE960021 A1 JP 10026189 A	15-10-2001 21-09-1997 15-11-2001 22-09-1997 27-01-1998
EP 0987467	A	22-03-2000	BR 9904169 A CA 2281864 A1 DE 69911877 D1 DE 69911877 T2 JP 2000097297 A US 6044719 A	12-09-2000 15-03-2000 13-11-2003 09-09-2004 04-04-2000 04-04-2000
US 2697367	A	21-12-1954	NONE	