

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
13 March 2008 (13.03.2008)

PCT

(10) International Publication Number
WO 2008/028881 A1

(51) International Patent Classification:

F01B 17/02 (2006.01) **F02G 1/02** (2006.01)
F01B 9/02 (2006.01)

(21) International Application Number:

PCT/EP2007/059161

(22) International Filing Date:

3 September 2007 (03.09.2007)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

0607742 5 September 2006 (05.09.2006) FR

(71) Applicant (for all designated States except US): **MDI - MOTOR DEVELOPMENT INTERNATIONAL S.A.**
[LU/LU]; 23 rue Beaumont, L-1219 Luxembourg (LU).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **NEGRE, Guy**
[FR/FR]; Domaine de Saint Andrieu, VA 17, avenue du
Loubet, F-06270 Villeneuve Loubet (FR). **NEGRE, Cyril**

[FR/FR]; Bloc C, 71 boulevard de Cimiez, F-06000 Nice (FR).

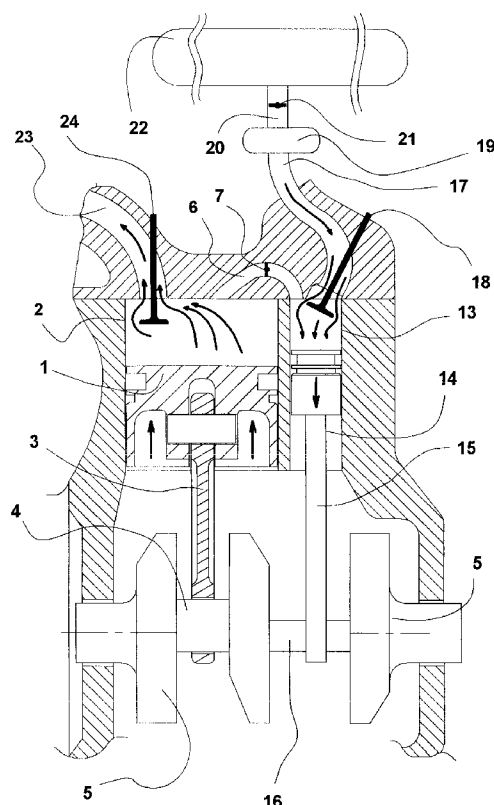
(74) Agents: **KOHN, Philippe** et al.; Cabinet Philippe Kohn,
30 rue Hoche, F-93500 Pantin (FR).

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

[Continued on next page]

(54) Title: IMPROVED COMPRESSED-AIR OR GAS AND/OR ADDITIONAL-ENERGY ENGINE HAVING AN ACTIVE EXPANSION CHAMBER



(57) Abstract: The invention proposes an engine supplied with compressed air comprising a main drive piston (1) driving a crankshaft (5) and one active expansion chamber (13) of a variable volume allowing work to be produced and which is connected, by a passage (6), with the volume contained in the driving cylinder (2), characterized in that the said passage (6) comprises a shutter (7) thus allowing the said active expansion chamber to be isolated from or to be placed in contact with the dead volume, in such a manner that the engine works according to a four-phase thermodynamic cycle: an isothermal expansion without work; a transfer-slight expansion with work said to be quasi-isothermal; a polytropic expansion with work; an exhaust at ambient pressure.



FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, 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*