

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
24 May 2007 (24.05.2007)

PCT

(10) International Publication Number
WO 2007/057007 A1

(51) International Patent Classification:
F01M 1/16 (2006.01) **F01M 9/02** (2006.01)

(21) International Application Number:
PCT/DK2005/000740

(22) International Filing Date:
21 November 2005 (21.11.2005)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant (for all designated States except US): **A.P. MØLLER-MÆRSK A/S** [DK/DK]; Esplanaden 50, DK-1263 Copenhagen K (DK).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LEAHY, Richard** [GB/GB]; 35 Lawnswood, Hessle, East Yorkshire HU13 0PT (GB). **DAMM, KLAUS-WERNER** [DE/US]; 117 Spring Drive, Chagrin Falls, OH 44022 (US).

(74) Agent: **ZACCO DENMARK A/S**; Hans Bekkevolds Allé 7, DK-2900 Hellerup (DK).

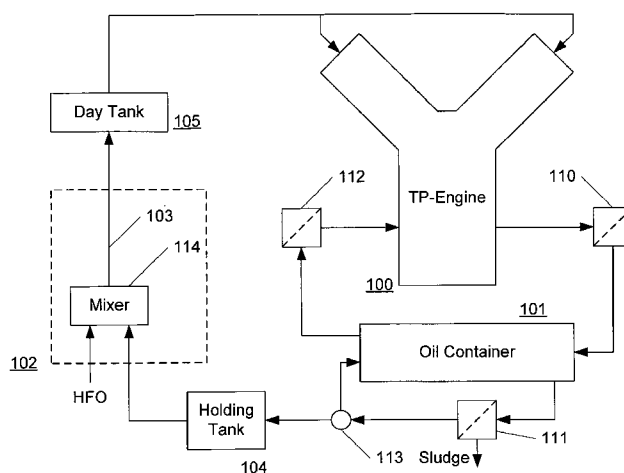
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, 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

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.

(54) Title: IMPROVED FUEL EFFICIENCY FOR TRUNK PISTON FOUR-STROKE DIESEL ENGINES



(57) Abstract: The present invention relates to a system (and corresponding method) for reducing fuel consumption in a four-stroke trunk piston diesel engine, the system comprising: a replenishment system (102) connected to receive engine oil from a four-stroke trunk piston diesel engine (100) and to receive replenishment oil (HFO), where the replenishment system (102) is configured for mixing the engine oil and the replenishment oil resulting in a mixed oil (103) that is introduced into the engine (100). In this way, the typical degradation process of the engine oil is slowed by replenishing it the adverse effects associated with the degradation process are reduced or slowed or even avoided in a very simple way. Thus, the replenishment system provides enhanced and consistent performance of the initial engine oil resulting in greatly reduced component wear and equipment lifecycle cost. Even further, a more environmentally friendly system is provided since less waste in the form of spent oil is produced as the usability period of time for the engine oil is prolonged. Thus great economical savings and environmental improvements are achieved.

WO 2007/057007 A1