

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
19 December 2024 (19.12.2024)



(10) International Publication Number
WO 2024/255974 A1

- (51) International Patent Classification:
F01M 1/08 (2006.01) **B05B 17/04** (2006.01)
- (21) International Application Number:
PCT/DK2024/050029
- (22) International Filing Date:
16 February 2024 (16.02.2024)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
PA 2023 70281 11 June 2023 (11.06.2023) DK
- (71) Applicant: **HANS JENSEN LUBRICATORS A/S**
[DK/DK]; Smedevænget 3, 9560 Hadsund (DK).
- (72) Inventor: **DUEHOLM, Bjørn Christian**; Ryegsgade 38, 4.
tv., 9000 Aalborg (DK).
- (74) Agent: **PATRADE A/S**; Ceresbyen 75, 8000 Aarhus C
(DK).

HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG,
KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY,
MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA,
NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO,
RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH,
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS,
ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, CV,
GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST,
SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ,
RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ,
DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT,
LU, LV, MC, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE,
SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,
GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:
— with international search report (Art. 21(3))

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,

(54) Title: A SYSTEM FOR LUBRICATING A LARGE TWO-STROKE ENGINE USING CONTROLLED MASS FLOW IN AN
INJECTOR NOZZLE

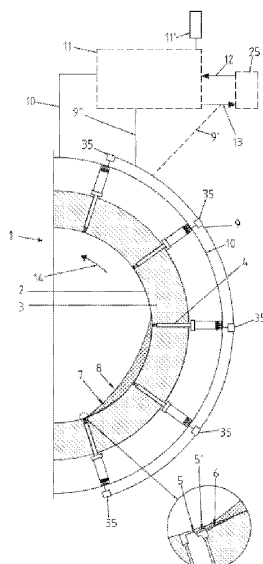


Fig. 1

(57) Abstract: A large engine, in particular a marine engine or engine for power plants, and a method of lubricating the engine with injectors. The method and engine are arranged for cyclic operation and cyclic operation and in the injection phase, providing pressure-liquid through a common rail system where all injectors are connected to the lubricant supply conduit and wherein the method and engine is arranged for operating within the following parameters: and wherein the values of the six parameters are selected so that the cavitation number is smaller than 1.5 and so that the ratio of the resulting force acting on the needle to the mass of the needle is above 50 m/s2 for the intended operation.

WO 2024/255974 A1