



(51) International Patent Classification:

F02C 3/067 (2006.01) F01D 25/24 (2006.01)

F02K 3/072 (2006.01)

(21) International Application Number:

PCT/US2013/026287

(22) International Filing Date:

15 February 2013 (15.02.2013)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

13/408,301 29 February 2012 (29.02.2012) US

(71) Applicant: UNITED TECHNOLOGIES CORPORATION [US/US]; One Financial Plaza, Hartford, Connecticut 06101 (US).

(72) Inventors: MERRY, Brian D.; 220 Bear Swamp Road, Andover, Connecticut 06232 (US). SUCIU, Gabriel L.; 27 Tanglewood, Glastonbury, Connecticut 06033 (US).

(74) Agent: LABA, Kerrie A.; Carlson, Gaskey & Olds/Pratt & Whitney, c/o CPA Global, P.O. Box 52050, Minneapolis, Minnesota 55402 (US).

(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, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, 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, LR, LS, MW, MZ, NA, RW, SD, SL, 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, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

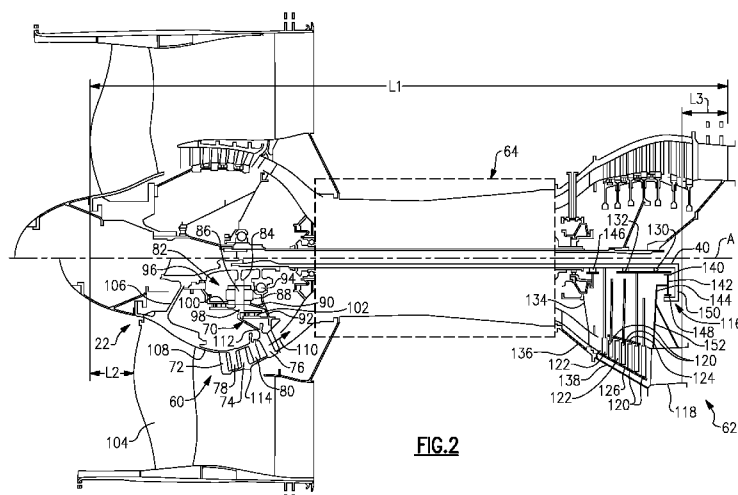
Published:

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

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

13 March 2014

(54) Title: COUNTER-ROTATING LOW PRESSURE TURBINE WITH GEAR SYSTEM MOUNTED TO TURBINE EXHAUST CASE



(57) Abstract: A gas turbine engine includes a shaft defining an axis of rotation. An outer rotor directly drives the shaft and includes an outer set of blades. An inner rotor has an inner set of blades interspersed with the outer set of blades. The inner rotor is configured to rotate in an opposite direction about the axis of rotation from the outer rotor. A gear system couples the inner rotor to the shaft and is configured to rotate the inner set of blades at a faster speed than the outer set of blades.