

(51) International Patent Classification:
F02C 3/04 (2006.01)(21) International Application Number:
PCT/US2013/034539(22) International Filing Date:
29 March 2013 (29.03.2013)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
13/437,290 2 April 2012 (02.04.2012) US

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(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).

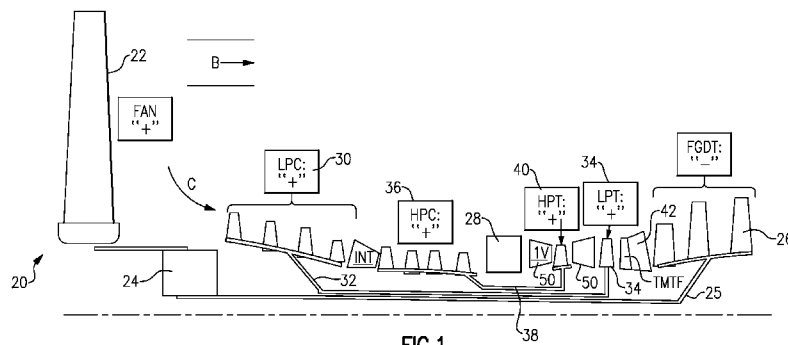
Published:

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

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

8 January 2015

(54) Title: GEARED TURBOFAN WITH THREE TURBINES WITH FIRST TWO CO-ROTATING AND THIRD ROTATING IN AN OPPOSED DIRECTION

**FIG.1**

(57) Abstract: A gas turbine engine has a fan rotor, a first compressor rotor and a second compressor rotor. The second compressor rotor compresses air to a higher pressure than the first compressor rotor. A first turbine rotor drives the second compressor rotor and a second turbine rotor. The second turbine drives the compressor rotor. A fan drive turbine is positioned downstream of the second turbine rotor. The fan drive turbine drives the fan through a gear reduction. The first compressor rotor and second turbine rotor rotate as an intermediate speed spool. The second compressor rotor and first turbine rotor together as a high speed spool. The high speed spool rotating in the same direction as the intermediate speed spool. The fan drive turbine rotates in an opposed direction as the intermediate speed spool.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2013/034539

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - F02C 3/04 (2014.01)

USPC - 60/39.162

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)

IPC(8) - F02C 3/04, 3/06, 3/10, 3/107, 3/113, 6/00, 7/00; F02K 3/00, 3/072 (2014.01)

USPC - 60/39.15, 39.162, 224, 226.1, 268, 771, 772, 792, 805; 310/112

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

CPC - F02C 3/04, 3/06, 3/10, 3/107, 3/113, 6/00, 7/00; F02K 3/00, 3/072 (2014.01)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Orbit, Google Patents, Google, Google Scholar

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2009/0151317 A1 (NORRIS et al) 18 June 2009 (18.06.2009) entire document	1-6, 13, 16-19
Y	US 2011/0056208 A1 (NORRIS et al) 10 March 2011 (10.03.2011) entire document	1-6, 13, 16-19
Y	US 2011/0309187 A1 (DEV) 22 December 2011 (22.12.2011) entire document	3-6, 17-19
Y	US 2008/0022692 A1 (NAGENDRA et al) 31 January 2008 (31.01.2008) entire document	13
A	US 2010/0154384 A1 (SCHILLING) 24 June 2010 (24.06.2010) entire document	1-20

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"A" document defining the general state of the art which is not considered to be of particular relevance	"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
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"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	

Date of the actual completion of the international search

03 January 2014

Date of mailing of the international search report

16 JAN 2014

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P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-3201

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PCT OSP: 571-272-7774