



(51) International Patent Classification:

F02K 9/42 (2006.01) F02K 99/00 (2009.01)  
F03H 99/00 (2009.01) F02K 9/62 (2006.01)

(21) International Application Number:

PCT/IB2018/055595

(22) International Filing Date:

26 July 2018 (26.07.2018)

(25) Filing Language:

Italian

(26) Publication Language:

English

(30) Priority Data:

102017000087235 28 July 2017 (28.07.2017) IT

(72) Inventor; and

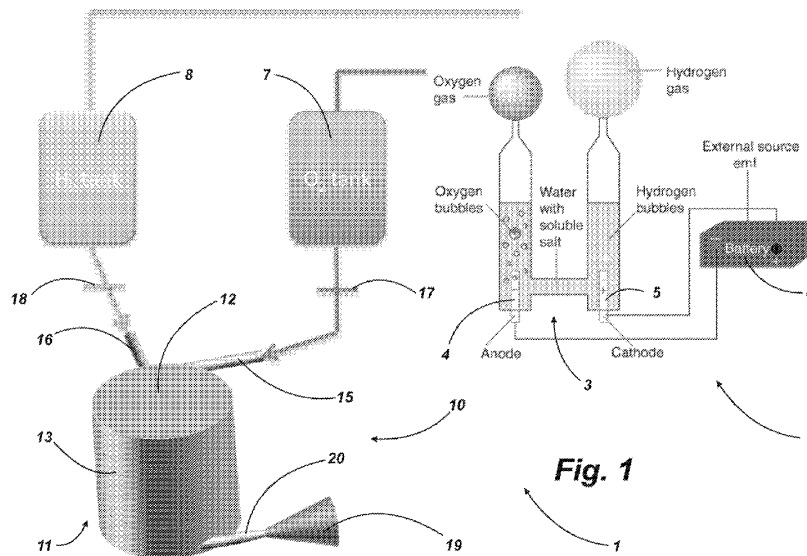
(71) Applicant: MINOTTI, Angelo [IT/IT]; VIA LAURI 32,  
00037 SEGNI (RM) (IT).

(74) Agent: LEONE, Mario et al.; c/o Cantaluppi & Partners  
S.r.l., Viale della Tecnica 205, 00144 Roma (IT).

(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, DJ, DK, DM, DO,  
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,  
HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP,  
KR, KW, KZ, LA, LC, LK, LR, LS, 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, SA,  
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, ST, SZ, TZ,  
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,

(54) Title: SPACE PROPULSION SYSTEM



(57) Abstract: A space propulsion system (1), having reduced sizes, is designed specifically for the application on miniaturised satellites, but it can be scaled easily based upon a wide range of sizes of the target vehicle, and it comprises: a combustion chamber (10) implemented by a cylindrical container (11) having cylindrical walls (13), a first end (12) provided with at least an injection duct (15) for a combustion agent, a fuel and/or a mixture thereof, for the injection according to a direction tangential to said cylindrical walls so as to induce a helical combustion path in the combustion chamber (10), a possible additional perpendicular injection duct (16) for a fuel or a combustion agent, and an opposite end (14) provided with a discharge duct (19) arranged according to a direction tangential to said cylindrical walls (13) so as to receive and direct said helical path, wherein the cylindrical walls in case have a deposition of catalytic material inside thereof, for accelerating the combustion reaction; and a supersonic nozzle (20), connected to said discharge duct (19)

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, KM, ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report (Art. 21(3))
- with amended claims (Art. 19(1))
- in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE