



(51) International Patent Classification:

F41A 1/08 (2006.01) F41A 1/10 (2006.01)

(21) International Application Number:

PCT/US2017/019749

(22) International Filing Date:

27 February 2017 (27.02.2017)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/301,269 29 February 2016 (29.02.2016) US

(71) Applicant: **NAMMO TALLEY, INC.** [US/US]; 4051 North Higley Road, Mesa, AZ 85215 (US).

(72) Inventors: **JEZIERSKI, Dominic**; 3534 E Tonto Pl, Chandler, AZ 85249 (US). **LAMBERT, Jerry**; 1690 W. H Street, Dixon, CA 95620 (US). **BLOMQUIST, Harry**; 2317 East Egret Ct., Gilbert, AZ 85234 (US). **EARLY, Stephen, Joseph**; 3430 N Alba Circle, Mesa, AZ 85213 (US). **GOODWIN, Bill**; 108 N Nevada Way, Gilbert, AZ 85233 (US).

(74) Agent: **RICHTER, Paul, M., Jr.**; Andrews Kurth Kenyon LLP, One Broadway, New York, NY 10004-1050 (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, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, 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, 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).

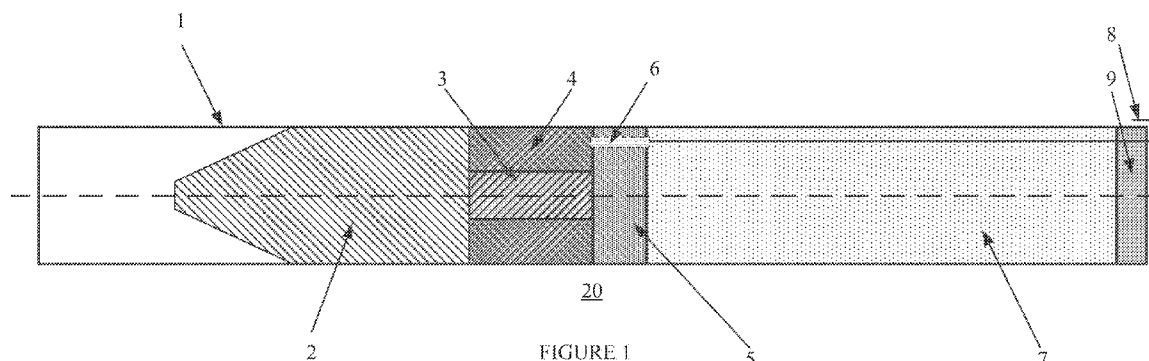
Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

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

21 December 2017 (21.12.2017)

(54) Title: COUNTERMASS LIQUID FOR A SHOULDER LAUNCHED MUNITION PROPULSION SYSTEM



(57) Abstract: A counter-mass liquid for a shoulder launched propulsion system that has low corrosivity, high density, low viscosity, and a constant viscosity as a function of temperature. Upon function of the shoulder launched propulsion system, the counter-mass liquid may be expelled through the breach end of the shoulder launched propulsion system by expanding propellant gas. The counter-mass liquid may be an organic salt selected from the group consisting of at least one or more of cesium formate and potassium formate.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 17/19749

A. CLASSIFICATION OF SUBJECT MATTER
 IPC(8) - F41A 1/08; F41A 1/10 (2017.01)
 CPC - F41A 1/08; F41A 1/10

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)

See Search History Document

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

See Search History Document

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

See Search History Document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y ---- A	US 2014/0265074 A1 (THE PULLMAN COMPANY) 18 September 2014 (18.09.2014) para [0069], [0071], [0072]	1-7, 10-13 ----- 8-9
Y ---- A	US 2014/0343413 A1 (DANMARKS TEKNISKE UNIVERSITET) 20 November 2014 (20.11.2014) para [0059]	1-7, 10-13 ----- 8-9
A	US 2014/0007758 A1 (BEIJING MECHANICAL EQUIPMENT INSTITUTE) 09 January 2014 (09.01.2014) the entire document	1-13
A	US 2007/0068374 A1 (OSTBERG et al.) 29 March 2007 (29.03.2007) the entire document	1-13
A	US 5,551,330 A (REUCHE) 03 September 1996 (03.09.1996) the entire document	1-13
A	US 4,554,860 A (JOHANSSON et al.) 26 November 1985 (26.11.1985) the entire document	1-13
A	Formate Technical Manual. Technical Manual [online]. Cabot Corporation, 09/2013 [retrieved on 2017-10-15]. Retrieved from the internet: <URL:http://www.cabotcorp.com/solutions/products-plus/cesium-formate-brines/formate-technical-manual>	1-13

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

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

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"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

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"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

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

15 October 2017 (15.10.2017)

Date of mailing of the international search report

03 NOV 2017

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
 P.O. Box 1450, Alexandria, Virginia 22313-1450
 Facsimile No. 571-273-8300

Authorized officer:

Lee W. Young

PCT Helpdesk: 571-272-4300
 PCT OSP: 571-272-7774