

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
24 October 2019 (24.10.2019)



(10) International Publication Number
WO 2019/204405 A1

(51) International Patent Classification:

B64D 1/22 (2006.01) *B66C* 1/34 (2006.01)
B64C 39/02 (2006.01) *B64D* 1/10 (2006.01)
B64D 1/12 (2006.01) *G06Q* 10/08 (2012.01)

(21) International Application Number:

PCT/US2019/027825

(22) International Filing Date:

17 April 2019 (17.04.2019)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

15/958,552 20 April 2018 (20.04.2018) US

(71) Applicant: **WING AVIATION LLC** [US/US]; 100 Mayfield Avenue, Mountain View, CA 94043 (US).

(72) Inventor: **PRAGER, Andre**; 100 Mayfield Avenue, Mountain View, CA 94043 (US).

(74) Agent: **CAVAN, Christopher M.**; McDonnell Boehnen Hulbert & Berghoff LLP, 300 South Wacker Drive, Chicago, IL 60606 (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, 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, 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))

(54) Title: PERFORATED CAPSULE HOOK FOR STABLE HIGH SPEED RETRACT

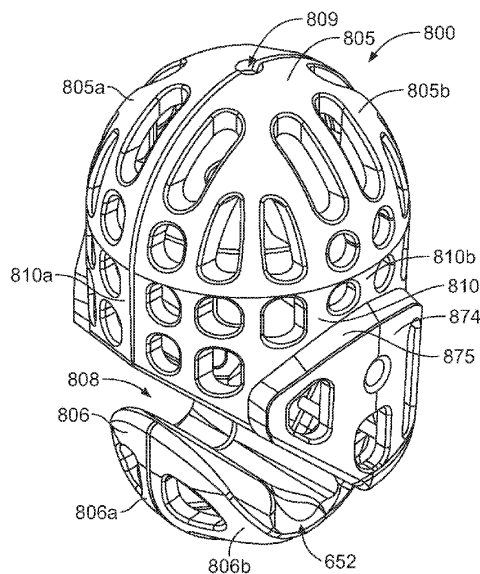


FIG. 4B

(57) Abstract: A payload coupling apparatus is provided that includes a housing having an upper portion, a lower portion, and a side wall positioned between the upper and lower portions, an attachment point on the housing adapted for attachment to a first end of a tether, a slot in the housing that extends downwardly towards a center of the housing thereby forming a hook or lip on the lower portion of the housing beneath the slot, a plurality of holes in the upper portion of the housing; and a plurality of holes in the lower portion of the housing. A method of retracting a payload coupling apparatus during UAV flight is also provided.

WO 2019/204405 A1