



(51) International Patent Classification:

B64C 29/00 (2006.01) B64C 27/28 (2006.01)
B64C 27/26 (2006.01) B64C 27/52 (2006.01)
B64C 27/24 (2006.01)

(21) International Application Number:

PCT/US2022/074357

(22) International Filing Date:

29 July 2022 (29.07.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/203,822 31 July 2021 (31.07.2021) US
63/333,966 22 April 2022 (22.04.2022) US

(71) Applicant: SUPERNAL, LLC [US/US]; 1101 16th Street,
N.W., Washington, DC 20036 (US).

(72) Inventors; and

(71) Applicants: HEIRONIMUS, William Kyle [US/US]; c/o
Supernal, LLC, 1101 16th Street, N.W., Washington,
DC 20036 (US). WANG, Brian [US/US]; c/o Supernal,
LLC, 1101 16th Street, N.W., Washington, DC 20036 (US).
CHUNG, Stephen [US/US]; c/o Supernal, LLC, 1101 16th
Street, N.W., Washington, DC 20036 (US). GONZALEZ,
Luis [US/US]; c/o Supernal, LLC, 1101 16th Street, N.W.,
Washington, DC 20036 (US). CHEN, Anthony [US/US];
c/o Supernal, LLC, 1101 16th Street, N.W., Washington,
DC 20036 (US).

(74) Agent: MAULDIN, R. Maxwell et al.; Finnegan, Hender-
son, Farabow, Garrett & Dunner, LLP, 901 New York Ave-
nue, N.W., Washington, DC 20001 (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, CV, CZ, DE, DJ, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,

(54) Title: VERTICAL TAKE-OFF AND LANDING CRAFT SYSTEMS AND METHODS

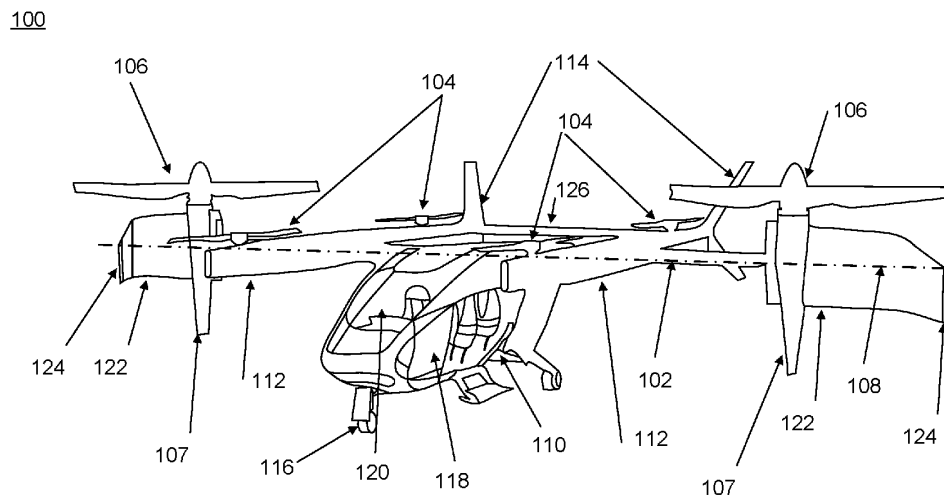


FIG. 1

(57) Abstract: Embodiments of the present disclosure provide systems and methods for a vertical take-off and landing craft. The system provides a craft capable of a vertical take-off and landing configuration and a horizontal thrust configuration. The system may include, for example, at least a proprotor, an edgewise blade, and a body. The proprotor may be configured to tilt to achieve a horizontal thrust component. A portion of a lift surface may be configured to tilt with the proprotor. In some embodiments, the vertical take-off and/or landing craft may further comprise a tail connected to a first boom and a second boom. In some embodiments, the vertical take-off and/or landing craft may further comprise a tail attached to the body.

[Continued on next page]

HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, 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, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, 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:

09 March 2023 (09.03.2023)