

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
17 November 2022 (17.11.2022)



(10) International Publication Number
WO 2022/240570 A3

(51) International Patent Classification:
B63H 1/26 (2006.01) *B63H 5/10* (2006.01)

(21) International Application Number:
PCT/US2022/025848

(22) International Filing Date:
21 April 2022 (21.04.2022)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
63/177,645 21 April 2021 (21.04.2021) US
63/300,887 19 January 2022 (19.01.2022) US

(71) Applicant: **SHARROW ENGINEERING LLC** [US/US];
1845 Walnut Street, Suite 1601, Philadelphia, PA 19103
(US).

(72) Inventor: **SHARROW, Gregory C.**; 1125 Berkshire Rd,
Grosse Pointe Park, MI 48230 (US).

(74) Agent: **KLUGER, Joan, T.**; Barnes & Thornburg LLP,
222 Delaware Avenue, Suite 1200, Wilmington, DE
19801-1611 (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, 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,

(54) Title: DUO-PROPELLERS AND SINGLE PROPELLERS

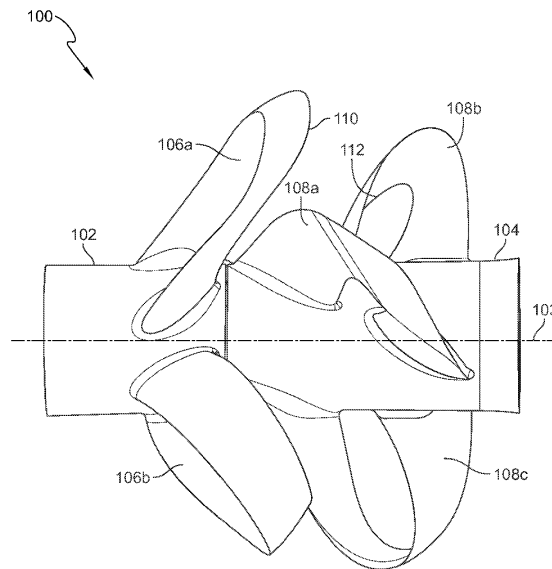


FIG. 1

(57) Abstract: A duo propeller disclosed having a forward propeller having increased loading distribution and high swirl near the tip. The duo propeller has an aft propeller with a more optimal loading distribution that can cancel the high tip swirl from the forward propeller. The duo-propeller an enhanced ability for the aft propeller to capture the energy lost to the swirling flow of the forward propeller's outflow.

[Continued on next page]

WO 2022/240570 A3

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:

23 March 2023 (23.03.2023)