

(43) International Publication Date
26 February 2015 (26.02.2015)

- (51) International Patent Classification:
B63B 1/28 (2006.01) *B63B 1/30* (2006.01)
- (21) International Application Number:
PCT/SI2014/000047
- (22) International Filing Date:
14 August 2014 (14.08.2014)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
P201300223 21 August 2013 (21.08.2013) SI
- (71) Applicant: **QUADROFOIL, PROIZVODNJA IN STORITVE, D.O.O.** [SI/SI]; Partizanska Ulica 38, SI-2310 Slovenska Bistrica (SI).
- (72) Inventor: **PIVEC, Simon**; Majaronova Ulica 10, SI-1000 Ljubljana (SI).
- (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, 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, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, 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, 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))

(54) Title: VESSEL CONTROL SYSTEM WITH MOVABLE UNDERWATER WINGS

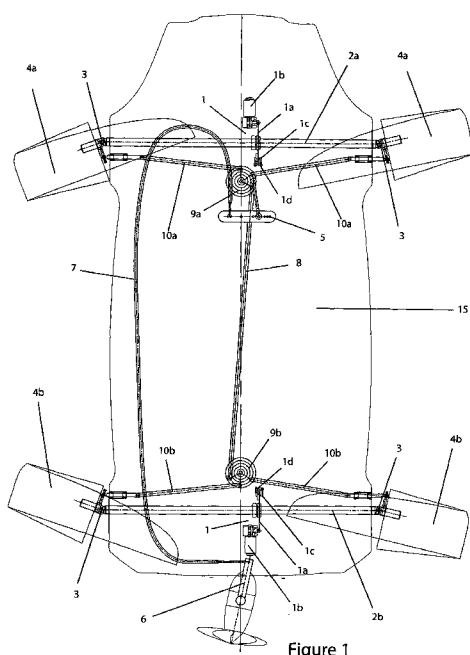


Figure 1

(57) Abstract: The control system of the vessel with moving underwater wings allows steering with the wings (4a and 4b), while in turn the front pair of wings (4a) turns in the direction of the turn, the rear pair of wings (4b) turns in the opposite direction. The wing pairs (4a and 4b) settled in the direction of the turn radius. This reduces the turning radius and the roll of the vessel in comparison with conventional steering systems, increasing the manoeuvrability of the vessel. The minimal roll of the vessel in the turns allows for an even and maximum distance between the surface and the entire hull of the vessel. This is an advantage in wavy waters, because the waves do not crash into the hull of the vessel. This lowers energy consumption and makes for a peaceful and quiet ride. It is possible to steer the vessel with only the motor (6), with only at least two pairs of wings (4a and 4b) at the same time or a separate pair of wings (4a or 4b), or in a combined manner with the motor (6) and two pairs of wings (4a and 4b) at the same time or a separate pair of wings (4a or 4b). From an energy consumption standpoint the combined steering mode with the motor (6) and two pairs of wings (4a and 4b) is the most optimal type of control. The control system of the vessel with moving underwater wings, is linked to the lifting system (1), the safety brake (1c), which allows one to raise the wings (4a and 4b) over the vessel out of the water and the lower the wings (4a and 4b) under the hull of the vessel at the desired position or angle, which produces lift and thus raises the vessel out of the water during the sail at already very low speed. The brake (1c) keeps the wings (4a and 4b) in their set position. The lifting system (1) with a safety brake (1c) also has a safety function.