



US005673645A

United States Patent [19]

[11] Patent Number: **5,673,645**

Bandyopadhyay

[45] Date of Patent: **Oct. 7, 1997**

[54] **AGILE WATER VEHICLE**

[75] Inventor: **Promode R. Bandyopadhyay**,
Barrington, R.I.

[73] Assignee: **The United States of America as
represented by the Secretary of the
Navy, Washington, D.C.**

[21] Appl. No.: **627,816**

[22] Filed: **Apr. 1, 1996**

[51] Int. Cl.⁶ **B63G 8/00**

[52] U.S. Cl. **114/312; 114/274**

[58] Field of Search **114/312, 314,
114/321, 330-333, 337, 338, 274, 162,
163, 145 R, 126; 440/13-15, 17, 19, 20**

[56] **References Cited**

U.S. PATENT DOCUMENTS

1,372,402	3/1921	Christoff	440/17
2,873,710	2/1959	Morel	114/338
3,183,871	5/1965	Reder	114/338
3,448,710	6/1969	Gaskins	114/338

Primary Examiner—Edwin L. Swinehart
Attorney, Agent, or Firm—Michael J. McGowan; Prithvi C. Lall; Michael F. Oglo

[57] **ABSTRACT**

An agile water vehicle for travel above and below the water surface. includes a hull having therein a helmsman's compartment, a payload compartment, and a propulsor unit. A rudder assembly is fixed to the hull and includes a cylindrically-shaped (or slightly tapered) tubular member having a rudder thereon and extending therefrom, the tubular member being rotatable. A wing assembly is fixed to and spaced from a bottom portion of the hull, the wing assembly comprising a pair of wings extending widthwise of the axis of the hull, and a flap adapted for disposal in each of the wings and extendible therefrom, the flaps being operable for pivotal movement upwardly and downwardly from the wings. The propulsor unit, the rudder assembly, and the flaps are operable from the helmsman's compartment. A pair of propulsors are disposed on the wings and are rotatable around the spanwise axis of the wings. A pair of differential flaps are mounted on a rotatable axial cylinder or ring with a fixed divider plate therebetween.

15 Claims, 3 Drawing Sheets

