United States Patent [19]

Kobylinski et al.

[11] **3,709,180**

[45] **Jan. 9, 1973**

[54] HYDROFOIL CRAFT

[76] Inventors: **Lech Kobylinski,** Chlopska 34D/28, Gdansk-Oliwa; **Mieczyslaw Krezelewski,** Stolarska 4A/4, Gdansk; **Edmund Brzoska,** Lumumby 32E/13, Gdansk-Oliwa; **Witold Krenicki,** Dzierzynskiego 3/15, Gdynia, all of Poland

[22] Filed: **Aug. 27, 1970**

[21] Appl. No.: **67,453**

[30] **Foreign Application Priority Data**

Sept. 9, 1969 Poland ..... P 135792

[52] **U.S. Cl.** ..... **114/66.5 H**

[51] **Int. Cl.** **B63b 1/20**

[58] **Field of Search** ..... 115/66.5 H

[56] **References Cited**

UNITED STATES PATENTS

2,274,200	2/1942	Hill	114/66.5 H
2,603,179	7/1952	Gardiner	114/66.5 H
2,890,672	6/1959	Boericke	114/66.5 H

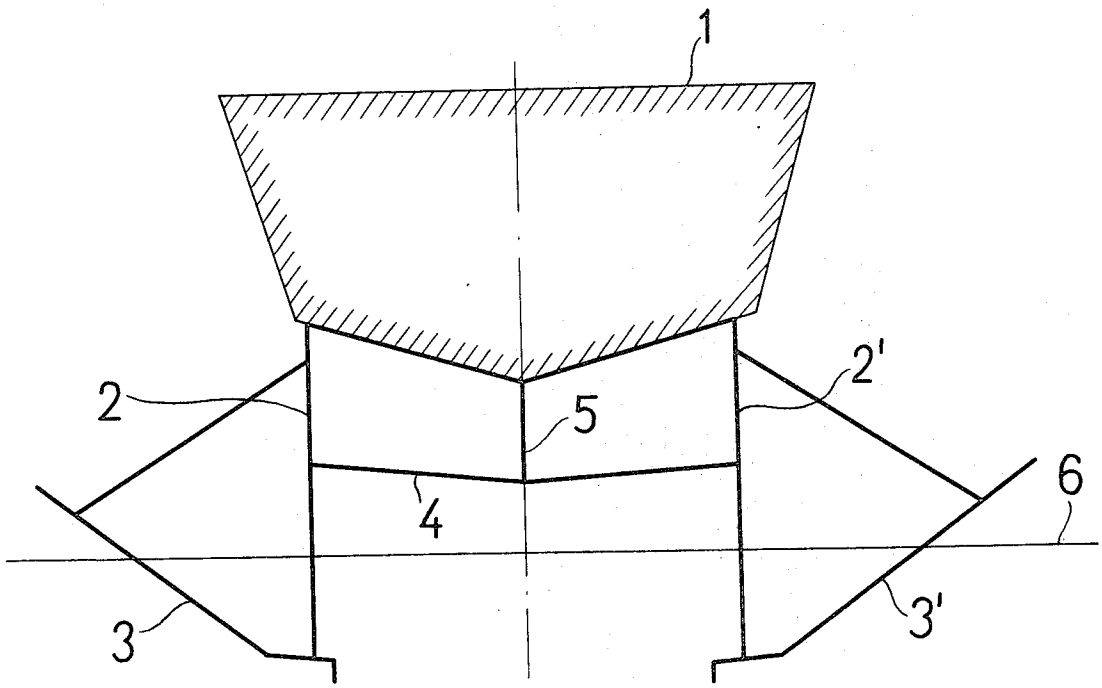
Primary Examiner—Andrew H. Farrell

Attorney—Irvin A. Lavine

[57] **ABSTRACT**

A hydrofoil craft having a pair of laterally spaced bow supporting planes carried by downwardly extending supports has a transverse roll stabilizer extending between the supports and structurally connected to them, the stabilizer being above the in-flight calm water line and above the space between the bow supporting planes.

4 Claims, 2 Drawing Figures



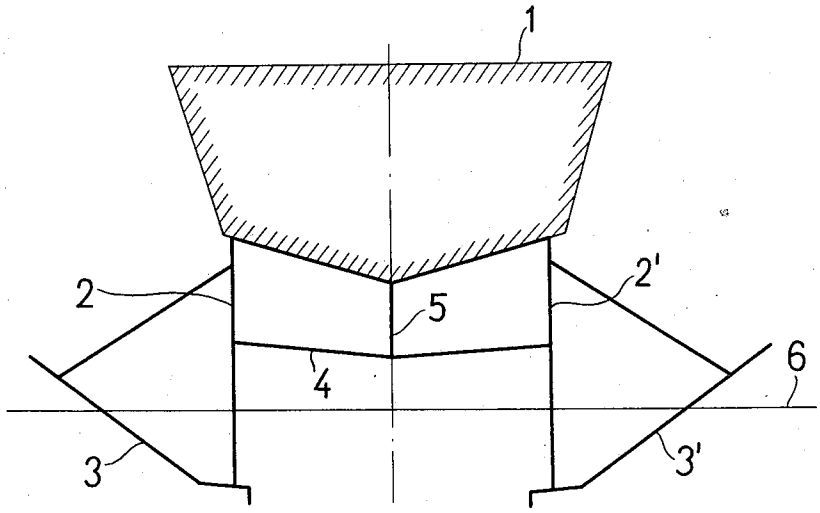


Fig. 1

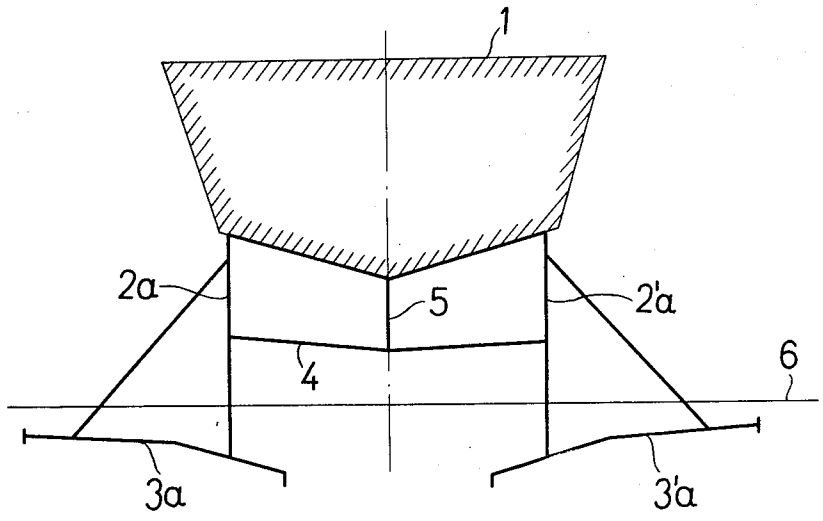


Fig. 2

HYDROFOIL CRAFT

The subject of the present invention is a roll stabilizer for a hydrofoil craft with two laterally spaced bow, surface cutting or slightly immersed, bearing planes made as mirror image in relation to the plane of symmetry and adopted especially for fast crafts.

Hitherto known roll stabilizers of hydrofoil crafts equipped with two bearing planes at the bow were in the form of short horizontal planes, fixed individually or in the form of a ladder on the vertical supports of the bearing plane or in the form of stabilizing planes situated between side supports of the bearing plane outside of the hull of the hydrofoil craft.

Stabilizers like these are not efficient enough as their stabilizing force is effective only when large disturbances of balance take place, whereas their placement next to the bearing plane increases the resistance of the hydrofoil craft at start and in movement on rough water.

An object of the present invention is to provide a roll stabilizer for hydrofoil craft with two laterally spaced bow, surface cutting or slightly immersed bearing planes which makes possible the elimination of the disadvantages mentioned above.

This object has been achieved through provision of a roll stabilizer for hydrofoil craft in the form of a plane fixed between bow supports of the laterally spaced bearing planes and above the water-line movement on calm water.

The advantages of the present stabilizer includes the absence of harmful influence on the bearing planes, and provides reaction to lurching of the hydrofoil craft due to small disturbances with no increase in the resistance. Moreover the stabilizer situated so as to be above the in-flight calm water-line constitutes the structural link between the two bow bearing planes, making an integral structural unit in the form of a light frame which results in avoiding of the necessity for heavy supports and complicated solutions applied hitherto when fixing the bearing planes to the hull of the hydrofoil craft and ensures at the same time their high strength and elimination of vibrations.

The subject of the invention is shown in an exemplary execution on the drawing wherein.

FIG. 1 shows a surface cutting, laterally spaced bow bearing planes and the rolling stabilizer of the hydrofoil craft between them in front view, and

FIG. 2 shows slightly immersed laterally spaced bow bearing planes and the rolling stabilizer of the hydrofoil craft between them in front view.

As is shown in FIG. 1 of the drawing, to the hull 1 of the hydrofoil craft are fixed the laterally spaced, downwardly extending supports 2, 2' of the laterally spaced bow bearing planes 3, 3' which have their inboard ends laterally spaced apart; between the bearing planes 3, 3' and supports 2, 2', is situated the roll stabilizer 4 of hydrofoil craft additionally supported with the support 5. The roll stabilizer 4 is situated above the water-line 6 during flight of the hydrofoil craft on calm water. The geometrical characteristics of the roll stabilizer 4 of the hydrofoil craft may be constant or variable along its span. Depending on the direction of roll of the hydrofoil craft in relation to the balance position, the symmetrical or unsymmetrical immersing of the roll stabilizer 4 of the hydrofoil craft cause the generation of a stabilizing torque which ceases at the moment of the return of the hydrofoil craft to the balance position.

At the start when the whole surface of the roll stabilizer 4 of the hydrofoil craft is immersed, a bearing force is generated on it which causes the trim of the hydrofoil craft on the stern and increases the angle of attack of bearing plane 3, 3' which facilitates the taking-off of the hull 1 from the water surface. Similarly when alighting, at the moment of immersing of the roll stabilizer plane 4 of the hydrofoil craft, the generated bearing force develops trimming torque in the direction of the stern which ensures the gentle landing of the hull 1 on the water.

What we claim is:

1. A hydrofoil craft comprising:
   - a hull for resting on the water when said craft is at rest or moving at low speeds,
   - means for hydrodynamically supporting said hull above the water at high speeds comprising a pair of laterally spaced bow bearing planes having laterally spaced apart inboard ends providing a space between them beneath the center of said hull free of bearing planes,
   - means for supporting said bow bearing planes below said hull, and
   - roll stabilizer means beneath said hull and above the space between said bow bearing planes, said roll stabilizer means being above the in-flight water line,
   - whereby said roll stabilizer means does not have a bearing plane therebeneath.

2. The hydrofoil craft of claim 1, wherein said bow bearing plane supporting means comprises a pair of laterally spaced supports extending downwardly from said hull and each connected to a said bow bearing plane adjacent the said inboard end thereof.

3. The hydrofoil craft of claim 1 wherein said bow bearing plane supporting means comprises a pair of laterally spaced supports extending downwardly from said hull, said roll stabilizing means extending between said supports, and connected thereto.

4. The hydrofoil craft of claim 1, said roll stabilizing means comprising a transversely extending plane.

* * * * *