Feb. 4, 1958 U. S. HARKSON 2,821,948

WATER CRAFT HAVING HYDROPLANES

Filed Feb. 6, 1956

Fig. 1.

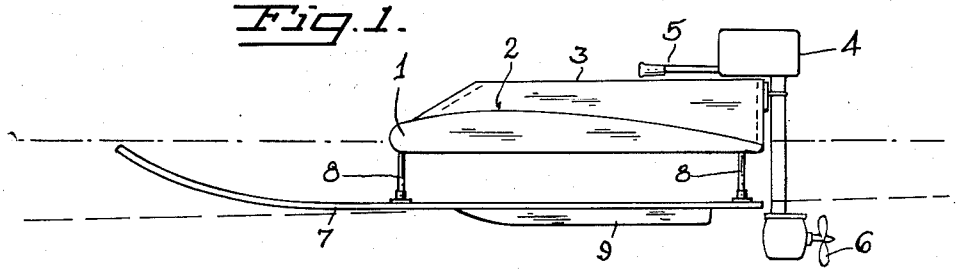


Fig. 2.

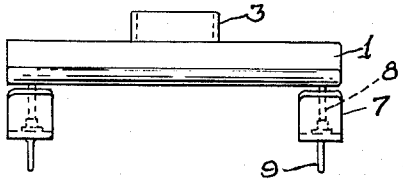
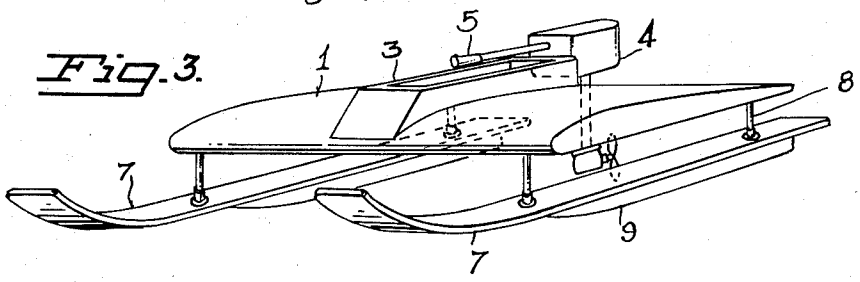


Fig. 3.



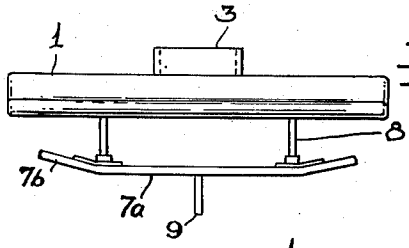


Fig. 5.

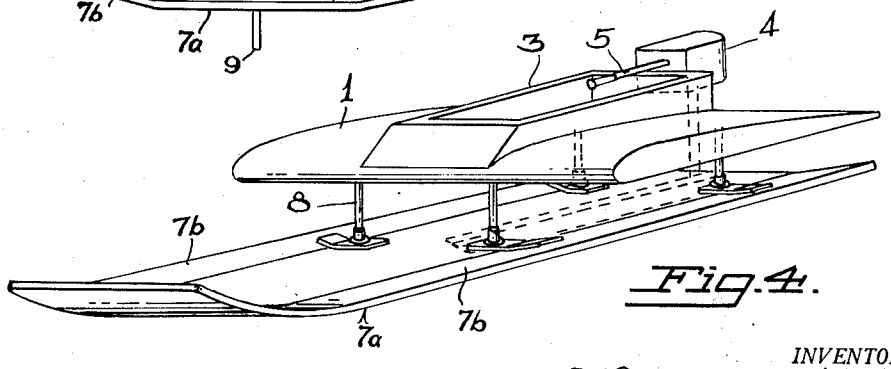


Fig. 4.

INVENTOR
Ulysses S. Harkson
BY
J. E. Trabucco
ATTORNEY

United States Patent Office 2,821,948 Patented Feb. 4, 1958

2,821,948

WATER CRAFT HAVING HYDROPLANES

Ulysses S. Harkson, San Mateo, Calif.

Application February 6, 1956, Serial No. 563,647

1 Claim. (Cl. 114—66.5)

This invention relates to water craft of the hydroplane type and more particularly to a pleasure boat designed to glide on the surface of the water.

The water craft embodying the principles of my invention utilizes a novel air foil combination which imparts a lift to the craft as it is propelled forwardly on the surface of the water. The hull of the craft is shaped in the manner of an airplane wing to provide upper and lower air foils for lifting purposes. The hull is supported on and above one or more skis or planes which glide upon the surface of the water as the craft is propelled forwardly by a motor actuated propeller. When the craft is at rest, the hull floats on the surface of the water with the planes submerged, but as the propeller advances the craft forwardly, the hull rises above the water's surface, and the planes assume positions permitting their forwardly gliding movement. As the craft increases its forward motion, the air foils of the hull impart a lift to the craft tending to reduce the resistance of the water against the planes, thereby making it possible for the attainment of increased speeds without an accompanying increase in power output.

The primary object of my invention is to provide a novel water craft having one or more planes arranged in supporting relationship with respect to and beneath a hull having upper and lower air foils adapted to impart a lift to the craft as it is propelled forwardly over the water beneath.

Other and further objects of my invention will be pointed out hereinafter or will be indicated in the appended claim, or will be obvious to one skilled in the art upon an understanding of the present disclosure. For the purpose of this application, I have elected to show herein certain forms and details of a water craft which is representative of my invention; it is to be understood, however, that the embodiment of my invention herein shown and described is for purposes of illustration only, and that therefore it is not to be regarded as exhaustive of the variations of the invention in the art.

In the accompanying drawing:

Fig. 1 is a side elevation of a water craft embodying the principles of my invention;

Fig. 2 is a front view of the same without the motor and propeller;

Fig. 3 is a perspective view of the same;

Fig. 4 is a perspective view of a water craft embodying a modified construction having but one supporting plane; and

Fig. 5 is a front view of the same without the motor and propeller.

Referring first to Figs. 1 to 3, the numeral **1** designates a buoyant hull having the general shape of an airplane wing in cross-section. Supported centrally on the hull is a cockpit **3** having a motor **4** mounted on its rear end. The motor **4** is provided with a forwardly disposed tiller **5** for control purposes and with a suitable depending shaft connection mounting a propeller **6**. The hull **1** is formed with a rounded or curved forward leading edge

and an upper curved surface **2** which provides an air foil capable of imparting a lift to the hull when the craft is traveling forwardly at a fast rate of speed. The contour or shape of the upper surface of the hull is similar to that found in well known airplane wing structures, and in principle the air circulating over the upper surface of the hull as the craft travels forwardly at an appreciable speed creates a low pressure above such upper surface, thereby exerting an upward force known as the lift. The underneath side of the hull is substantially flat and presents a plane or substantially plane surface, which when the craft is traveling forwardly is slightly inclined and provides an air foil exerting an upward pressure by reason of the air striking against it. Even though the underneath surface might not at all times be in an inclined position when the craft is traveling forwardly, there still would be an upward air pressure exerted on this surface, since the low pressure area is above the hull and the high pressure area is below.

Underlying the hull **1** and arranged in suitably spaced relation with respect thereto is a pair of laterally spaced parallel planes or skis **7, 7** having upwardly curved forward end portions. Since the planes or skis are not adapted to support the hull in a raised position above the surface of the water when the craft is at rest, such planes or skis are not necessarily buoyant. Each plane or ski **7** is connected to the fore and aft portions of the hull **1** by substantially vertical struts **8** of equal length. The hull is supported on the surface of the water with the struts and planes or skis submerged when the craft is not in motion. (See broken lines of Fig. 1.) The upper horizontal broken line shown in Fig. 1 indicates the surface of the water when the craft is at rest, and the lower horizontal line indicates the surface of the water when the craft is under way. Depending from the rear end portions of the planes or skis **7, 7** are stabilizing keel members **9, 9**. The propeller **6** is positioned slightly below the level of the planes or skis.

When the operation of the motor **4** is commenced and the propeller **6** functions to move the craft forwardly with increased speed, the skis **7, 7** gradually rise to a supporting position on the surface of the water. Thus when the craft is under way, the hull rides well above the surface of the water, and unlike other water craft of the hydroplane type, there is no contacting relationship with respect to the hull and the water to provide friction and resistance to the forward movement of the craft. The air foil at the upper surface of the hull in combination with the upward pressure of the air against the bottom surface of the hull imparts a lift to the craft, thereby enabling the skis to glide over the surface of the water beneath.

In the embodiment of my invention shown in Figs. 4 and 5, the hull **1** is supported by a plurality of struts **8** which are secured to a single plane or ski **7*a***. The plane **7*a*** has an upturned forward end portion and also upwardly extending side portions as at **7*b***. The width of the underlying plane **7*a*** is preferably, although not necessarily, somewhat narrower in width than the hull, thereby providing suitable stability for the craft when under way. A keel member **9** is secured centrally to the rear end portion of the plane **7*a***.

The upturned forward portions of the skis or planes **7** and **7*a*** normally prevent the craft from nosing downwardly into the water beneath.

By providing a hull adapted to ride well above the surface of the water and which is constructed with air foils capable of imparting a lift to the craft, greater speed is attained without increasing the motor's horsepower. Also, by reason of the upward lift imparted to the hull when the craft is under way, the planes and hull do not

tilt upwardly to any appreciable extent, as is customary with speed boats of the conventional type.

What I claim is:

A water craft comprising a pair of non-buoyant supporting planes normally submerged beneath the surface of the water when the craft is at rest, the said planes being of greater length than the length of the hull and extending an appreciable distance forwardly of the hull, a plurality of upstanding struts disposed between each of the planes and the boat hull, a buoyant hull supported on the struts in spaced relation to and above the planes and having a plane bottom surface and an upper surface forming an air foil capable of producing an upward pressure on the hull when the craft is under way, the hull normally contacting and resting on the surface of the water when the craft is at rest, and means carried by the hull for propelling the craft forwardly.

References Cited in the file of this patent

UNITED STATES PATENTS

1,749,017	Brownback	Mar. 4, 1930
1,835,618	Waller	Dec. 8, 1931
2,400,782	Randall	May 21, 1946
2,564,587	Sundstedt	Aug. 14, 1951
2,704,529	Hulett	Mar. 22, 1955

FOREIGN PATENTS

485,572	Great Britain	May 18, 1938