

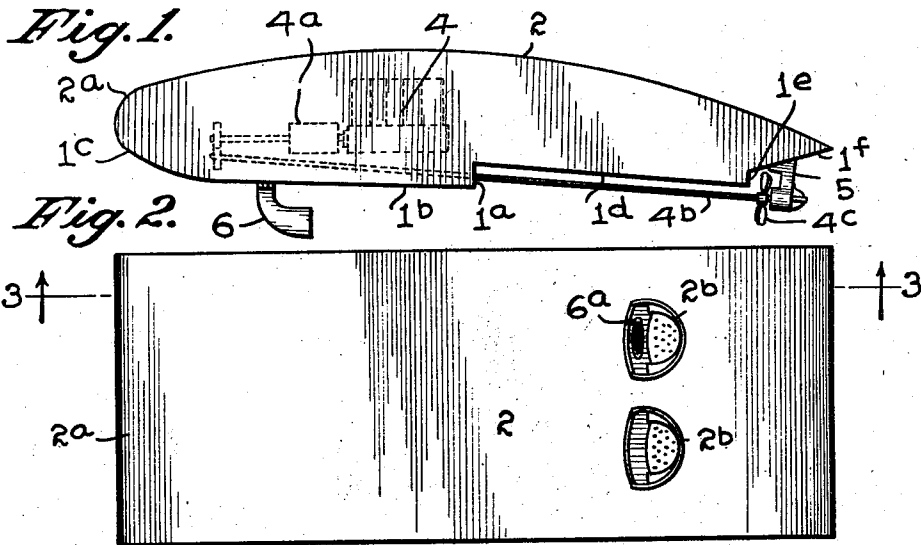
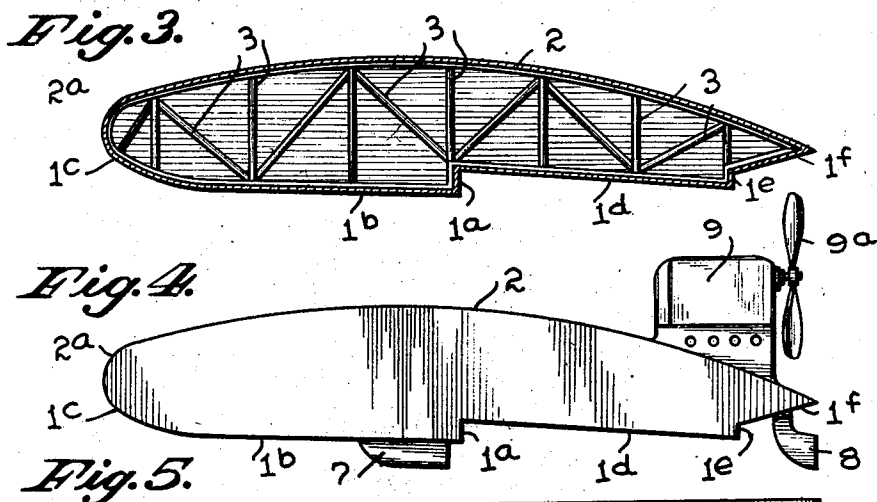
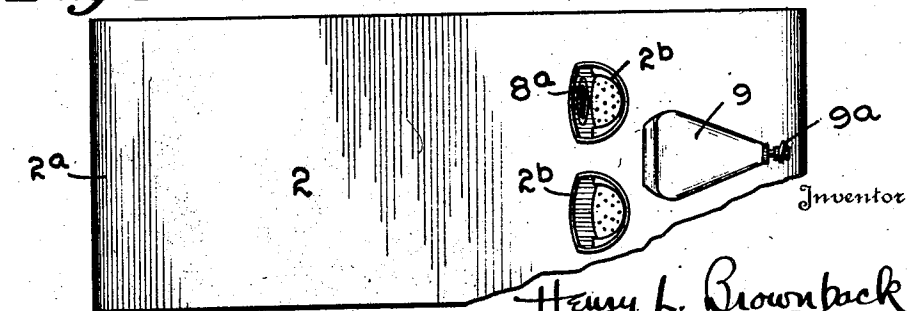
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SPEED BOAT

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UNITED STATES PATENT OFFICE

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SPEED BOAT

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This invention is a novel improvement in speed boats and the like, and the principal object of the invention is to provide a novel speed boat of the hydroplane type, driven
5 either by air or water, said boat having hydroplane lifting surfaces on the bottom of the hull, designed to support the weight of the boat by hydrodynamic reaction, the top surface of said hull instead of being simply
10 "fair" comprising an aerodynamic plane formed substantially to an aerofoil curve extending from bow to stern. Thus, in speeding up, the hull will have the support of the hydrodynamic plane or series of planes on the
15 bottom surface which have comparatively high lift at low speeds and high resistance at high speeds, and as soon as the boat attains sufficient speed, the hull will be supported for the most part by the lift of the
20 aerodynamic top surface caused by the rarification of the air above said surface, just enough of the bottom surface touching the water to provide proper balance.

I will explain the invention with reference
25 to the accompanying drawing which illustrates several practical embodiments thereof to enable others familiar with the art to adopt and use the same, and will summarize in the claims the essentials of the invention,
30 the novel features of construction, and novel combinations of parts, for which protection is desired.

In said drawings:

Fig. 1 is a side elevation of a speed boat
35 of the water-drive type, embodying my invention.

Fig. 2 is a top plan view thereof.

Fig. 3 is a section on the line 3—3, Fig. 2.

Fig. 4 is a side elevation of a speed boat of
40 the air-drive type embodying my invention.

Fig. 5 is a top plan view of the boat shown in Fig. 4.

As shown, the boat is preferably substantially rectangular in plan, the width thereof
45 being relatively great compared with its length. The bottom surface of the boat is preferably a hydrodynamic plane or series of planes, and as shown the bottom surface is preferably stepped as at 1^a, the forward deeper
50 portion 1^b of the hull being curved upward-

ly at the bow, as at 1^c. The rear portion 1^d of the bottom surface is shallower than the front portion 1^b, and the rear end of the bottom surface 1^d is preferably stepped as at 1^e, the portion 1^f of the bottom in rear of the stepped portion 1^e sloping upwardly and rearwardly to meet the top 2 of the hull.

The bottom surface is designed to support the weight of the boat by hydrodynamic reaction, the hydrodynamic planes 1^b, 1^d, having comparatively high lift at low speeds and high resistance at high speeds. The bottom of the hull however may be of any other type which will assist the hull in gliding over the surface of the water.

The top surface 2 of the boat is preferably rectangular in plan, and instead of being simply "fair" is built to aerodynamic form, that is, a section taken through the hull from bow to stern, will give a top line having a true aerofoil curve, whereby as the boat attains sufficient speed the hull will be supported for the most part by the lift of the aerodynamic top surface 2, just enough of the lower surface touching the water to provide balance, about 90-95% of the total lift of the hull being caused by the rarification of air above the top surface 2.

The front end of the top surface 2 is preferably rounded, as at 2^a, to meet the upwardly curved portion 1^c of the bottom surface. As diagrammatically shown in Fig. 3, the hull of the boat is preferably built on a system of trusses 3 similar to an aeroplane wing, and cock-pits 2^b may be provided in the top surface 2, but should be made as small as possible so as to maintain a maximum area to the top surface 2.

In Fig. 1, the hull is shown as being of water-driven type and houses an engine or motor 4, gear shift 4^a, and the propeller shaft 4^b which carries the propeller 4^c at its rear end, the propeller being preferably disposed under the inclined portion 1^f of the bottom surface. A combined propeller strut and pivot fin 5 supports the rear end of the propeller shaft 4^b. The rudder 6 of the boat is placed forward, and may be controlled in any desired manner from the steering wheel 6^a (Fig. 2).

The hull construction of the air-drive type, shown in Figs. 4 and 5, is substantially identical with the construction shown in Figs. 1 to 3 inclusive, except that the pivot fin 7 is placed at the rear end of the section 1^b of the bottom surface, and the rudder 8 is located at the rear end of the hull, and controlled by the steering wheel 8^a (Fig. 5). Furthermore the engine or motor 9 is placed upon the rear end of the top surface 2 with the propeller 9^a well above the surface of the water.

The air and water drive types of hulls however operate in substantially the same manner. At low speeds, with low resistances, sufficient under surface is provided to react against the water and start the boat gliding and to set the aerodynamic top surface 2 at the best angle to exert lift on the hull causing the hull to gather speed with a minimum of drag. As soon as the top surface 2 exerts lift on the hull a change in the position of the center of lift of the hull will take place, which will set the angle of incidence of the aerodynamic top surface 2 to give the maximum of lift with the minimum of drift, and so place the bottom surface that it will exert but little actual lift but will glide with little resistance and act as a pressure shifter and balancer.

Without the aerodynamic top surface 2 in an hydrodynamically supported hull, of usual type, the bottom surface would exert the entire lift, but with my thick section aerofoil top surface, the top surface will exert from 90-95% of the total lift, my boat therefore utilizing the best of both reactions, resulting in a great saving in power, or an increase in speed with the same power, since the water surface has a lift-drag ratio of from 4-1 to 7-1, and the aerodynamic surface has a lift drag ratio of about 18-1.

I do not limit my invention to the exact forms shown in the drawing, for obviously changes may be made therein within the scope of the claim.

I claim:

A water borne craft comprising a hull of truss construction, substantially rectangular in plan, having an aerodynamic upper surface conforming substantially with an aerofoil curve extending the entire length of the hull from bow to stern, and having a stepped hydrodynamic bottom surface of corresponding length; said hull having a relatively small cock-pit set therein flush with the upper surface; and means associated with the hull for propelling the same.

In testimony that I claim the foregoing as my own, I affix my signature.

HENRY LOWE BROWNBACK.