Sept. 24, 1929. A. W. KEMP 1,728,937

HYDROPLANE

Filed Aug. 10, 1928

Fig. 1.

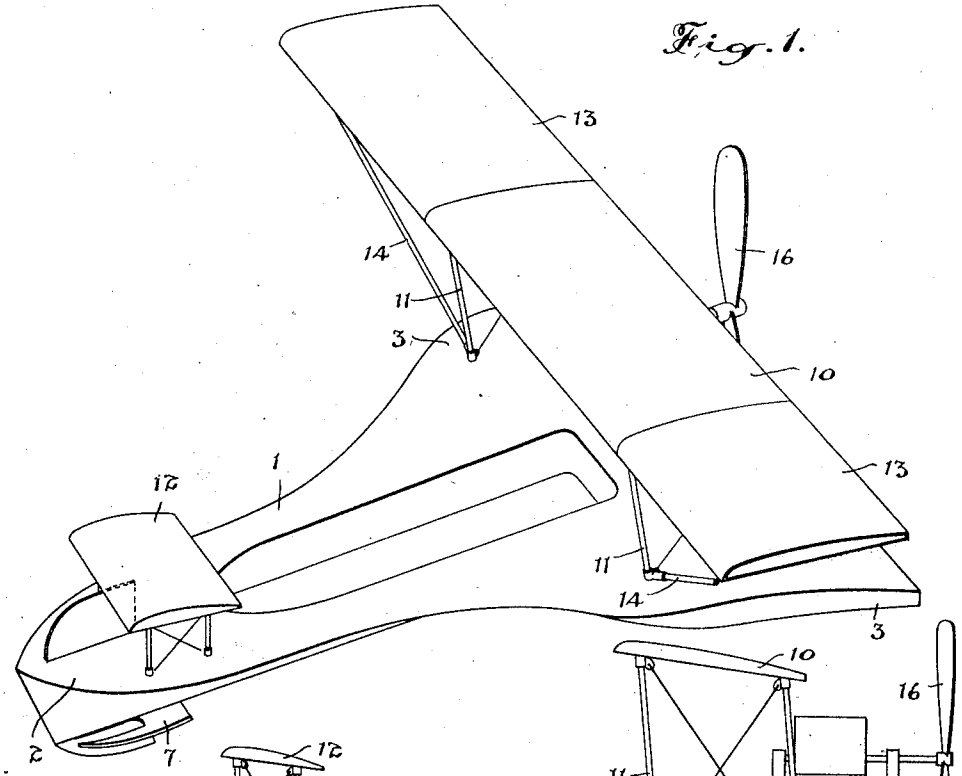


Fig. 2.

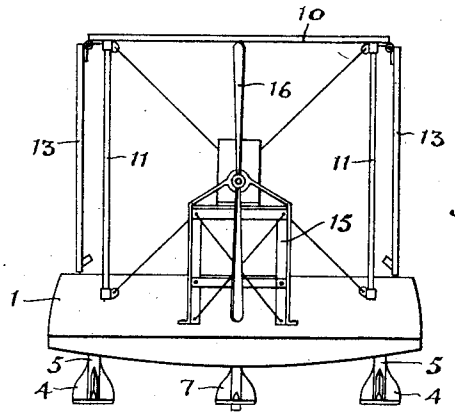


Fig. 3.

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UNITED STATES PATENT OFFICE

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HYDROPLANE

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The principal objects of the invention are, to devise a form of craft which will travel over the surface of the water at a remarkably high speed and will be easily controlled.

A further object is to provide a craft which will be comparatively safe to handle.

A still further object is to devise a water craft which may be adapted for travel over land, ice or snow.

The principal feature of the invention consists in the novel construction of the hull of the boat, whereby the weight thereof is mainly supported by air resistance, the hull having laterally extending planes sloping downwardly and aft and in the arrangement of air lifting planes spaced above the hull together with hydroplanes extending downwardly from the hull.

In the drawings, Figure 1 is a perspective view of a hydroplane constructed in accordance with this invention.

Figure 2 is a side elevational view of the structure illustrated in Figure 1.

Figure 3 is a rear elevation.

In carrying the present invention into effect the hull 1 is shaped at the bow 2 with the usual sheer and the sheer extends back to a point slightly forward of the midships, where it develops into a lateral strake which curves upwardly from the keel and spreads outwardly in the form of a pair of laterally extending planes 3.

The total width across the planes 3 will be approximately one-half of the total length of the craft.

It will thus be seen that there will be a very extensive stabilizing area under the planes 3 as they move over the surface of the water.

These planes developing from the hull at a point above the water line and gradually curving downwardly and swinging outwardly allow a very considerable quantity of air to pass underneath the same when the boat is in motion and the air as it is compressed toward the stern end of the vanes effects the lifting of the entire after end of the hull clear of the water.

Arranged beneath the planes 3 are a pair of small planes or hydro foils 4. These constitute a rigid hollow rib 5 which forms part of the frame structure of the boat and has a slot opening from the bottom. Into this slot is inserted a web 6 of the horizontal plane or foil which is skid-shape, being curved upwardly at the forward end and presents a supporting area against the water. One of these is arranged each side of the hull beneath the planes 3 and a similar foil 7 is arranged at the forward end.

The forward foil is preferably mounted upon a rudder shaft 8 so that it will swing to guide the craft in its movement over the water.

In order to lighten the draught of the craft to the maximum an aeroplane 10 is supported from the after end of the structure on struts 11 and a small aeroplane 12 is arranged at the forward end to lift the bow.

The rear plane 10 is preferably provided with hinged extensions 13 which are supported in an extended position by the angle struts 14 but these may fold down when the boat is not travelling at speed and will form a cabin or the frame for a cabin.

A covering may be placed over the rear plane and extend over the hull to the forward planes.

The engine in this craft is mounted on a superstructure 15 at the after end of the deck and drives the craft with an aeroplane propeller 16.

When the force of the propeller 16 is exerted against the hull it forces it through the water riding on the foils 4 and 7 and as the speed increases, the air pressures beneath the planes 3 increases and lifts the structure practically clear of the water, so that it skims over the surface.

When travelling thus the craft will operate at the same speed as a taxiing aeroplane, has the same weight and driving power and consequently very high speeds may be attained.

In extensive travelling it may be found necessary to cover land areas and the conversion of the device to a land travelling machine is extremely simple. It is merely necessary to remove the foils and replace them with wheel structures. Such an expedient is so

obvious that it is not necessary to illustrate same.

It may also be devised for travelling over ice and snow skids may be used, replacing the skids here shown.

The drive is always clear above the bottom and the air lift on the hull relieves surface tension and it is always very considerable when travelling on land or water.

It will also be understood that the many digressions in the actual shaping or contour of the hull and vanes may be made without departing from the spirit of the invention, which is to form the hull with laterally extending portions which form vanes that perform the actual lifting of the weight of the machine on the air imprisoned underneath.

What I claim as my invention is:—

1. A hydroplane, comprising a hull having the shear of its side walls developed laterally and spreading to form broad planes projecting beyond the hull and over the water surface and sloping downwardly toward the stern.

2. A hydroplane, comprising a hull having a central body structure formed with the shear developed to form vanes extending beyond the body of the hull and having the under surface flaring laterally outwardly and upwardly from the hull, the under surface of said vanes being sloped rearwardly and adapted to compress air over the surface of the water, and hydrofoils arranged beneath said planes to actually engage the water.

3. A hydroplane, comprising a body having a sheer at the bow developing outwardly aft to form a pair of vane-shaped wings to extend over the surface of the water, vanes having horizontal plane portions secured to the outward extensions from the after end of the hull and resting upon the water, and a pivotal sloping plane secured to the bow end of the hull forming a guiding rudder.

4. A hydroplane, comprising a hull having a V-shaped forward end developing to an upwardly and outwardly curved pair of wings at the aft end adapted to imprison a volume of air between the under-surface and the surface of the water, a pair of water vanes rigidly secured to the laterally extending air vanes, a hydro foil arranged at the forward end of the boat extending below the bow thereof, and aeroplanes arranged transversely above the hull.

5. A hydroplane, comprising a hull having laterally extending vanes adapted to slip over the surface of the water, hydrofoils arranged beneath the hull and having transverse planes to support the hull from the water when in motion, an aeroplane extending across the aft end of the hull and having hinged extremities adapted to be folded downwardly, and an air rudder at the forward end.

6. A hydroplane, comprising a hull having the shear of its side walls developed laterally and spreading to form broad planes projecting beyond the hull and over the water surface and sloping downwardly toward the stern, and an air plane spaced above and extending transversely of the hull.

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