Feb. 12, 1929. **1,701,925**

G. G. KISEVALTER

BOAT

Filed Jan. 24, 1928

Fig. 1

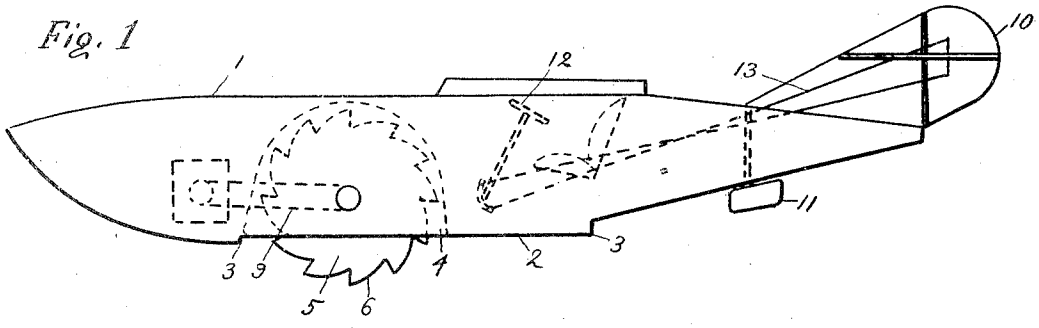


Fig. 2

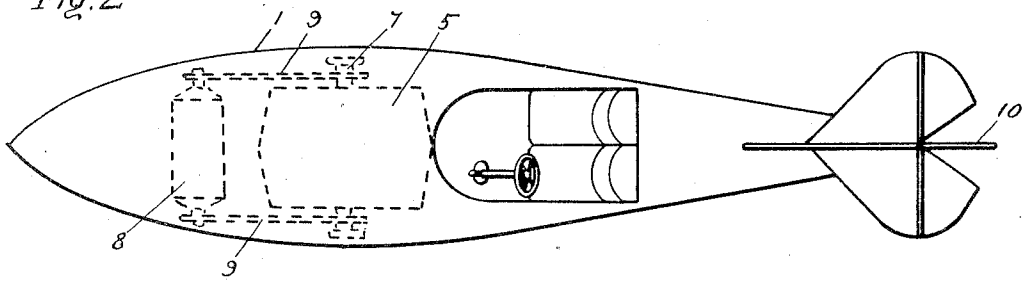


Fig. 3

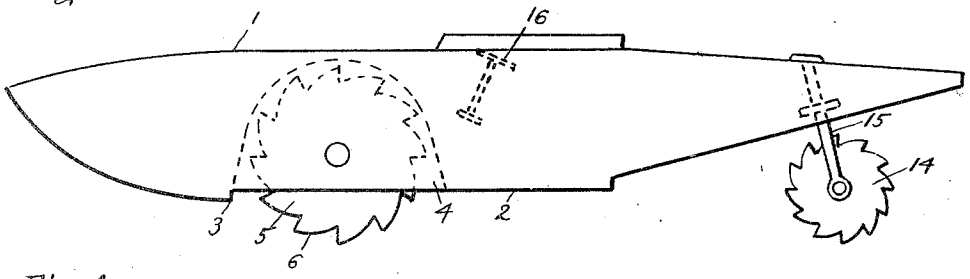
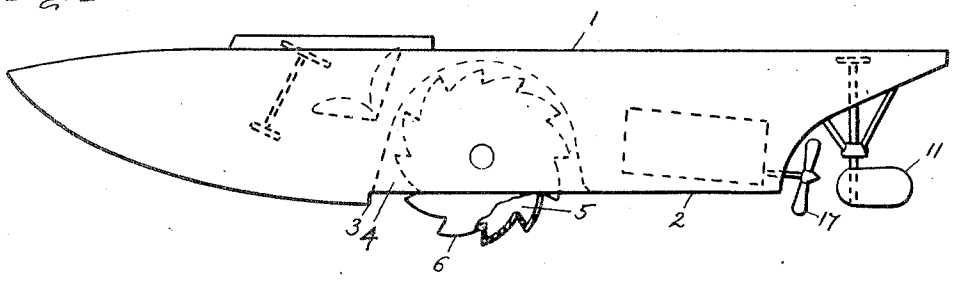


Fig. 4



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UNITED STATES PATENT OFFICE.

GEORGE G. KISEVALTER, OF NEW YORK, N. Y.

BOAT.

Application filed January 24, 1928. Serial No. 249,072.

My invention relates to boats and has a particular reference to boats of a gliding type or hydroplanes.

A large proportion of power in ordinary boats is used for overcoming frictional resistance of water. This resistance is proportional to the submerged surface, and in hydroplanes it is greatly reduced at high speeds due to the special design of the hull enabling it to rise above the surface of water.

In order to obtain the same result also at lower speeds I am using in my boat a special propelling device which lifts the forward portion of the boat out of water. This propelling device consists of a large paddle wheel extending across the hull of the boat and provided with specially shaped paddles or vanes which partly lift and partly propel the boat. Similar wheels may be also employed as gliding devices to enable the boat to rise when an ordinary propelling device is used, such as a screw propeller.

My invention is more fully described in the accompanying specification and drawing in which—

Fig. 1 is an elevation of my boat, Fig. 2 is a top view of same, Fig. 3 is an elevation of a modified arrangement, and Fig. 4 is another modification.

My boat consists of a hull 1 with a substantially flat bottom 2. It may be provided with steps 3 of a type used in ordinary hydroplanes in order to facilitate rising of the hull out of water at high speeds.

In the middle portion of the boat and preferably near the bow a transverse chamber 4 is provided, open at the bottom and adapted to enclose the upper portion of a paddle wheel 5. This wheel extends from one side of the boat to the other and has paddles 6 arranged spirally at the periphery of the wheel. They are curved so as to meet the surface of water without a shock and to leave at the rear without raising any appreciable waves.

The paddle wheel 5 is mounted on a shaft 7 supported in bearings 8 and is driven by an engine 8 through a suitable transmission, such as a chain 9. An air rudder 10 may be provided for high speeds and an ordinary water rudder 11 for low speeds, both rudders being operated from a steering column and wheel 12 by means of rods and cables 13.

The paddle wheel is made of a larger diameter in the middle, being of a barrel-like shape, so as to facilitate its rotation in water.

The operation of my boat is as follows.

With a sufficiently high speed of rotation of the paddle wheel, a vertical pressure component is created which tends to lift the hull of the boat out of water. A horizontal component force tends to propel the boat, and as the lifting force depends principally on the rotation of the paddle wheel, it follows, that the boat may be largely raised out of water even at low speeds, thereby reducing the frictional resistance and enabling it to move at a high rate of speed. The power expenditure is also reduced thereby rendering this boat more economical at low speeds.

It is important that the paddles or vanes be curved as shown, forming spirally shaped steps on the periphery of the wheel.

A modified arrangement is shown in Fig. 3 of a boat with a second smaller wheel 14 pivotally mounted in a forked shaft 15 supported in suitable bearings in the stern of the boat. The second wheel acts as a rudder and is operated by the steering wheel 16.

The paddle wheel 5 may be disconnected from the engine, and the latter may be made to operate an ordinary screw propeller 17. The wheel in this case acts as a roller and tends to lift the hull out of water at medium and high speeds of the boat.

At very high speeds the hull rises from the water and glides on air in a manner similar to operation of ordinary hydroplanes. Steps 3 entrain air under the hull thereby reducing frictional resistance and correspondingly increasing the speed of the boat.

Important advantages of my invention are that it enables the boat to rise out of water and to skim on its surface at practically any speeds of the boat thereby reducing the losses due to water friction and resistance. The draft of the boat may be made very small so that it is practicable to use my boat in shallow waters.

The paddle wheel of my boat, to be effective, must have its blades or floats curved from

the periphery toward the center and in a direction of rotation, the operating surface of each float being convex. The paddle wheel may be made as a watertight drum, the blades or floats forming an uninterrupted surface with steps or depressions.

I claim as my invention:

In a boat, the combination with a hull, of a buoyant paddle wheel, and a plurality of peripheral tooth projections on said wheel, the surfaces of said projections being convex from the front to the rear.

Signed at New York, in the county of New York and State of New York, this 21st day of January A. D. 1928.

GEORGE G. KISEVALTER.