

[54] **PEDAL OPERATED WATER SPORT VEHICLE**

648,855 5/1900 Day.....115/26

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[57] **ABSTRACT**

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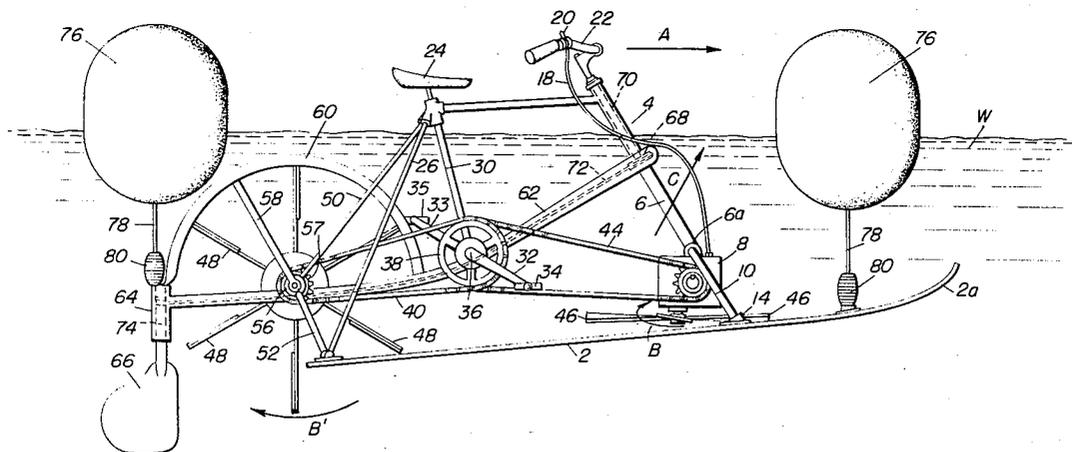
An aquatic vehicle having a frame on which a rider sits mounted on a pair of water skis, a horizontally rotating propeller to impart upward motion, a vertically rotating propeller to impart forward motion and a clutch mechanism to disengage the horizontally rotating propeller after the combined propeller motions have caused the skis to begin planing on the water surface.

[56] **References Cited**

**UNITED STATES PATENTS**

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**2 Claims, 4 Drawing Figures**





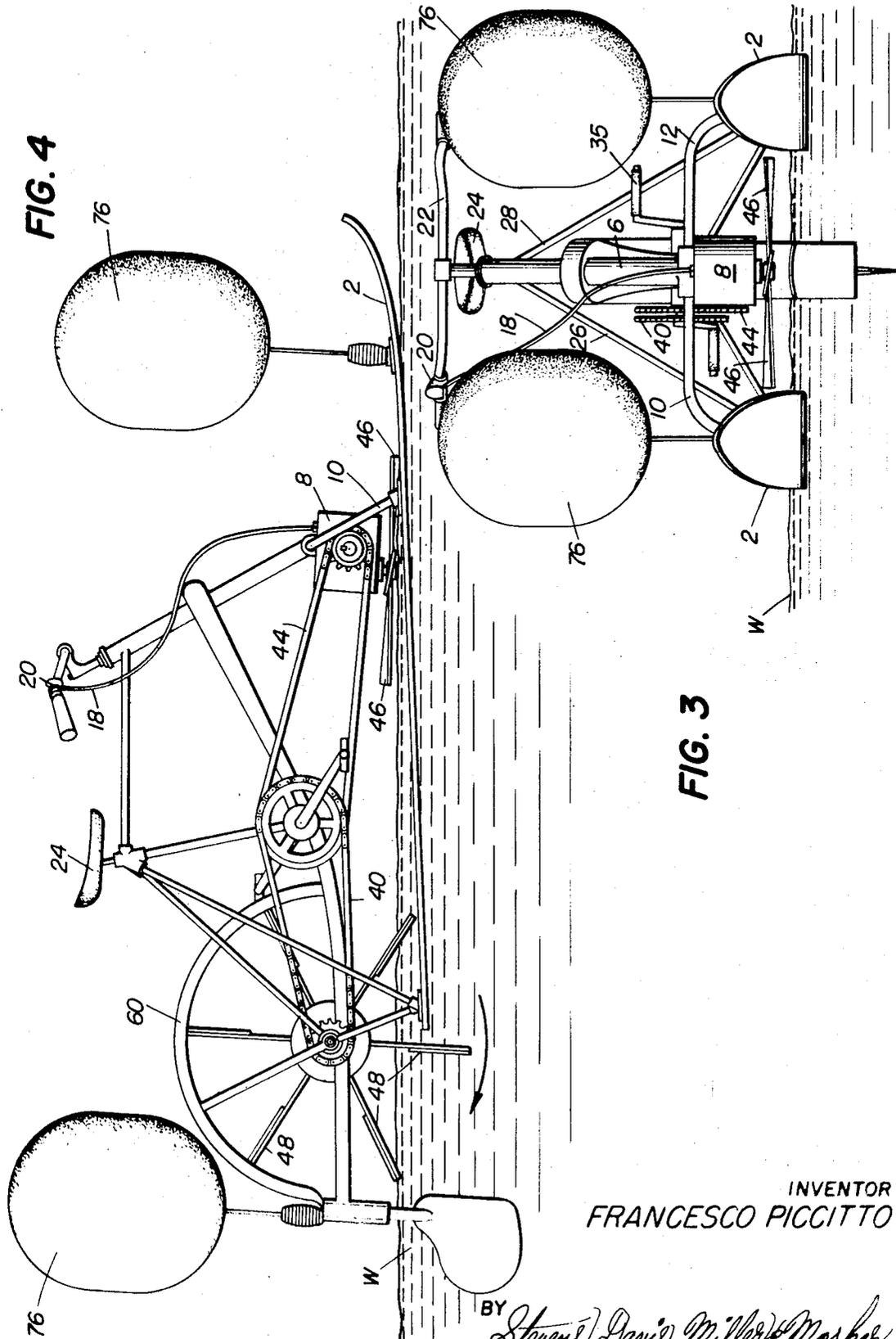


FIG. 3

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## PEDAL OPERATED WATER SPORT VEHICLE

This invention relates to water-borne sports craft and the like and more particularly to those powered by a rider for propelling the same over the surface of the water.

This invention is concerned specifically with a water cycle for recreational use by an individual on the water around resorts, amusement parks and the like for providing exercise, rest and relaxation.

Prior art devices of this general class have had the disadvantage primarily that they have been bulky and cumbersome. Most of this bulk is due to the size of the pontoons necessary to support the device in the water and to keep it from sinking. However, the large size of the pontoons results in excessive drag as the device is propelled through the water. Thus, in addition to the normal amount of energy required to propel the device, additional energy is necessary merely to overcome this excessive drag.

The present invention is designed to overcome this defect in prior art devices by utilizing a pair of thin, narrow skis which, when planing in the water, offer substantially less resistance to the water than the pontoons of the prior art devices, thereby resulting in a corresponding diminution of drag.

It is therefore an object of the present invention to provide an improved water sport vehicle requiring substantially less propelling effort by the operator than prior art devices.

It is a further object of this invention to provide means to prevent the vehicle from sinking when the operator is not propelling it in a forward direction.

In describing the best mode presently contemplated of this invention, reference will be made to the attached drawing, wherein:

FIG. 1 is a side elevation of the described embodiment prior to planing;

FIG. 2 is a top plan view of the embodiment of FIG. 1;

FIG. 3 is a front elevation of the vehicle when planing on the water; and

FIG. 4 is a side elevation in the planing

With reference to the drawing, the device of the present invention comprises a pair of water skis 2, each having an upwardly curved front portion 2a which serves to raise the skis 2 out of the water W when the vehicle is being propelled in the forward direction, as indicated by the arrow A.

On the top surface of skis 2 is mounted a frame designated generally by reference numeral 4. This frame is readily adaptable from a bicycle-type frame; the conventional front fork is replaced by a member 6, from the bottom portion 6a of which is hung a suitable clutch mechanism 8, which may be of a known type. Also extending from end 6a are members 10 and 12 which attach the front portion of frame 4 to the skis 2 by any suitable means, such as sockets 14 and 16, respectively.

A cable 18 extends from the clutch mechanism 8 to a control lever 20 mounted on a handlebar 22, which handlebar comprises part of the steering mechanism of the vehicle.

Also mounted on the top of frame 4, rearwardly of handlebar 22, is a seat 24 on which the operator sits. Seat 24 may be vertically adjustable in a manner well known to those familiar with the bicycle art.

Extending downwardly from the rear portion of frame 4 are members 26 and 28 which mount frame 4 on the rear portions of skis 2 by means similar to that mounting the members 10 and 12 to skis 2.

Also mounted below frame 4 is a member 30, one end of which is connected to the frame. At the other end of member 30 is mounted a chain drive mechanism similar to that used on conventional bicycles, consisting essentially of pedals 32, 33 having foot pads 34, 35 mounted on the common axle 36 on either side of a gear 38. A chain 40, such as a bicycle chain, winds around and engages gear 38.

The above-described drive mechanism differs from that of the conventional bicycle drive by having a second gear 42 mounted adjacent to and coaxially with gear 38. Gear 42 is connected by a chain 44 to the clutch mechanism 8 in any suitable manner well known to one skilled in the art of drive mechanisms.

The output of the clutch mechanism 8 drives a horizontally rotating propeller 46, the axis of rotation of which is substantially perpendicular to the plane of the skis 2.

Extending downwardly and rearwardly from frame 4 is a vertically rotating paddle wheel type propeller 48. The axis of rotation of propeller 48 is substantially perpendicular to that of propeller 46. Propeller 48 is connected to frame 4 by a forked member 50 in the same way that a rear wheel of a conventional bicycle is connected to the bicycle frame. Additionally, propeller 48 is connected by members 52 and 54 to skis 2, preferably adjacent the connecting point of members 26 and 28, respectively. Members 50, 52 and 54 are connected to axle 56 of propeller 48 in a conventional manner, as is member 58 which mounts fender 60 over the blades of propeller 48.

Chain 40 is connected in a known manner to axle 56, as by a gear 57 which engages chain 40.

A forked housing 62 runs from the front of frame 4, below axle 36, around both sides of propeller 48, below axle 56, and ends at a rudder housing 64 which houses a rudder 66. At its front portion, housing 62 flares to accommodate a pulley 68 mounted at the lower end of handlebar shaft 70 which is contained in the hollow front portion of frame 4.

Cable 72 loops around pulley 68, runs through housing 62 and loops around rudder shaft 74 in rudder housing 64 to complete the steering mechanism of the vehicle.

Finally, flotation members 76 are rigidly mounted on rods 78. Rods 78 are in turn mounted through stiff springs 80, one on each of the front portions of skis 2 and one at the rear of the vehicle, such as at the top of rudder shaft housing 64.

The present invention is operated as described hereinafter. A rider mounts the vehicle as he would a conventional bicycle. At this time, the vehicle is floating in the water partially submerged and buoyed up by flotation members 76. To start off, the rider engages the clutch mechanism 8 by appropriately setting lever 20. The rider then operates pedals 32 as on a conventional bicycle. This causes both propellers 46 and 48 to begin rotating in the direction of arrows B and B'. This tends to drive the vehicle simultaneously in the direction of arrows A and C where motion in the direction of arrow C is derived from the operation of propeller 46 and that in the direction of arrow A is derived from the rotation of propeller 48.

The combined rotations of propellers 46 and 48 cause the vehicle to rise out of the water while moving in a forward direction. After sufficient forward velocity has been achieved, skis 2 will begin to plane on the water's surface, as shown in FIGS. 3 and 4.

At this time, propeller 46 will also have risen out of the water and the rider may operate lever 20 to cause the clutch mechanism 8 to disengage propeller 46 from chain drive 44 and gear 42. From this point, all of the rider's pedalling energy will be devoted only to rotating propeller 48 to obtain desired forward motion. And since the bottom of the skis present a relatively small amount of surface to the water to cause drag, the amount of drag relative to prior art devices is thereby greatly reduced.

It can be readily seen then that the purpose of mounting flotation members 76 on rigid rods is to maintain the flotation member 76 out of contact with the water when the skis are planing; otherwise, the reduction in drag achieved by the planing skis would be lost by the drag caused by the trailing flotation members.

While a particular embodiment of the present invention has been shown and described, it is apparent that numerous variations and modifications may be made thereto, and it is therefore contemplated in the appended claims to cover all such variations and modifications as falls within the true spirit and scope of the

present invention.

What is claimed is:

1. An aquatic vehicle comprising, in combination: a pair of substantially flat water skis having an upwardly curved front portion; a frame mounted on said skis, said frame including a seat, steering means, and a bicycle-type rotating pedal gear and chain drive mechanism; first propelling means mounted on said frame for rotation in a plane substantially perpendicularly to the plane of said skis; means connecting said chain drive mechanism to said first propelling means; second propelling means mounted on said frame for rotation in a plane substantially perpendicular to the plane of rotation of said first propelling means; second means disengageably connecting said chain drive mechanism and said second propelling means, said second connecting means including a clutch mechanism for disengaging said second propelling means from said chain drive mechanism.

2. The device of claim 1, further comprising means imparting buoyancy to said vehicle in a rest mode of said vehicle in water, said buoyance imparting means comprising float members rigidly mounted on said vehicle wherein, in an operative mode of said vehicle, said float members are maintained above the surface of the water and substantially out of contact therewith.

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