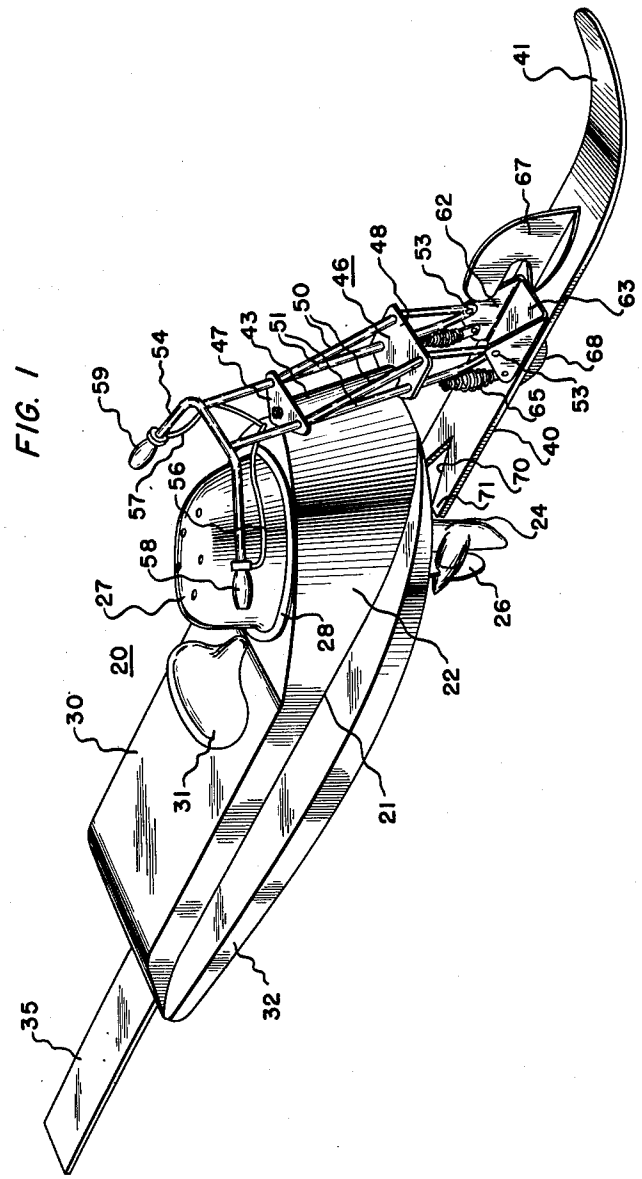
Dec. 24, 1957 F. L. CHAFFEE 2,817,101

WATERCRAFT

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FIG. 1



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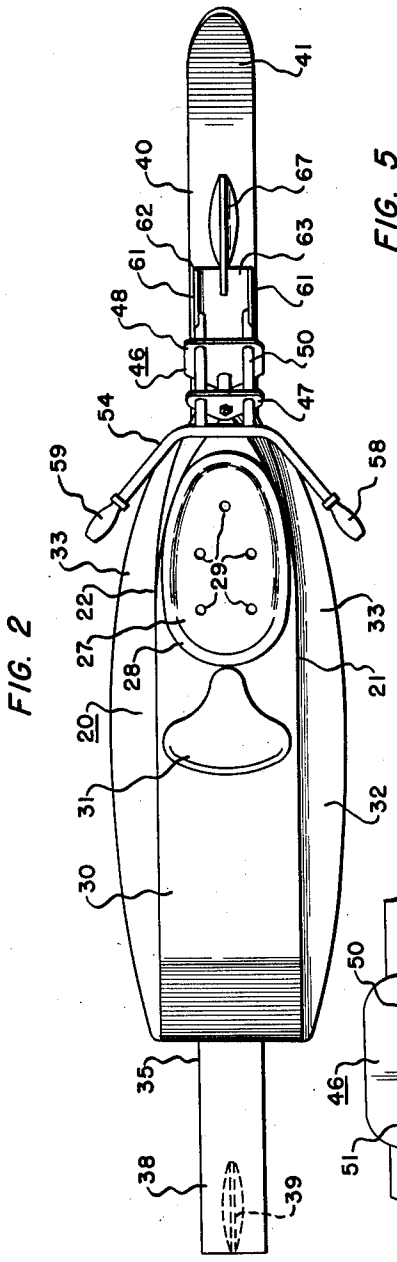


FIG. 2

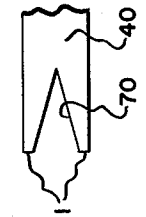


FIG. 5

FIG. 3

FIG. 4

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WATERCRAFT

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12 Claims. (Cl. 9—18)

The present invention relates to watercraft of the type including an elongated floating structure provided with ski means therebelow. Such watercraft floats while stationary or while moving through the water at relatively low speeds; upon increase of speed, the floating structure rises in the water, and, when the craft reaches a predetermined speed, it will plane upon the ski means.

In practicing the present invention, the ski means includes a front ski which may be turned about a vertically-extending axis for guiding the direction of movement of the craft. I utilize only one ski in the rear, which ski is aligned with the elongated floating body, and aligned with the front ski when the latter is in craft-forward moving position. The floating structure or boat carries the motor, and the propelling means, which is driven by the motor, is interposed between the front and rear skis and disposed below the skis.

Further objects and advantages will be apparent from the following description, reference being had to the accompanying drawings wherein a preferred embodiment of the invention is illustrated.

In the drawings:

Fig. 1 is a perspective view of the watercraft;

Fig. 2 is a top plan view of the craft;

Fig. 3 is a side view of the craft;

Fig. 4 is a sectional view taken on line 4—4 of Fig. 3; and

Fig. 5 is a fragmentary top plan view of the rear portion of the front ski.

Referring more in detail to the drawings, the watercraft 20 includes a floating structure or boat 21, the prow 22 of which is hollow for receiving what is known in the art as an "outboard motor," the lower portion only of which is shown, including the drive shaft casing 24, the rudder section 25, and propeller 26. The top of the motor is enclosed by a cover 27 formed of suitable material such as a transparent plastic. The cover is provided with a flanged rim 28 suitably secured to the top of the prow 22. Openings 29 may be formed in the dome or cover 27 for the ingress and egress of cooling air for the motor.

The top 30 of the boat carries a seat 31 for the driver. The bottom portion 32 of the boat flares outwardly on opposite sides of the boat as at 33 to provide an enlarged planing surface on the bottom of the boat; this planing surface extends across the entire bottom of the boat. The upper surface of the forward part of the flares or ledges 33 form the foot rest for the driver whose knees straddle the prow 22.

In the embodiment, the rear ski 35 is fixed to the rear end of the boat and is preferably rigidly connected to the underside of the boat by a web 36. This web depends from midway of the starboard and port sides of the floating structure 21. The front 37 of ski 35 bows upwardly, and the rear 38 bows downwardly but on a relatively larger radius than the bow of the front. The extreme rear end of ski 35 carries a keel 39.

The front ski 40 is mounted for movement about a vertically-extending axis, which axis intersects the structure 21 midway of the starboard and port sides of said structure. The front 41 of ski 40 is also bowed upwardly. The extreme front end 43 of the prow 22 carries a vertically-extending bushing 44 for an axle 45. A frame 46 is secured to this axle and comprises upper and lower plates 47 and 48; these plates are secured to the upper and lower ends of the axle 45.

Front tubes or rods 50 and rear tubes or rods 51 extend through and are suitably secured to the lower plate 48. The lower ends of one of the pairs of front and rear rods are joined and likewise the lower ends of the other pair of rods are joined. These joined rods carry horizontally-extending pins or axles 53. When the front ski is longitudinally aligned with the rear ski and the boat, the axes of these axles 53 are at right angles to the elongated rear ski and the boat. The upper ends of rods 50 are suitably secured to the upper plate 47; likewise rear rods are also secured to plate 47 but extend through the plate and are connected with a bar 54 which forms a handle bar. Thus the front ski can be swung clockwise or counterclockwise about the axis of axle 45 by the handle bar 54 for steering the craft in a manner similar to the steering of a bicycle or motorcycle. Cables 56 and 57 are connected to the rotatable handles 58 and 59 for controlling the throttle valve of the carburetor and for advancing and retarding the sparking of the spark plugs.

The pins 53, at the lower end of the frame 46, are pivotally connected with the upper ends of vertically-extending legs 61 of a U-shaped frame 62; the yoke 63 of this frame is suitably attached to the top side of front ski 40. Coil springs 65 are connected between frame 62 and the rods 51. When the craft is in ski-gliding or planing operation, springs 65 are in a neutral position, i. e., they are not under compression or tension. Such position is shown in Fig. 3 wherein the surface of the water is indicated at 66. A lifting of the front end of the front ski 40 causes the springs 65 to be under tension. Conversely, a lowering from normal of the front end of the front ski causes the springs 65 to be under compression. Thus, the springs yieldingly resist movement of the front ski from its normal, i. e., its substantially horizontal position.

The top of front ski 40 carries an upwardly-extending rudder 67; it is disposed immediately forward of the U-shaped frame 62. The underside of ski 40 carries a downwardly-extending rudder 68. Both of these rudders extend longitudinally of the ski. The lower rudder is positioned so that the axis of the axle 45 intercepts the rudder substantially forwardly of midway of the length thereof, whereby the fore part of the rudder offers far less ski-turning movement of face than the stabling force of the relative large trailing area of that part of the rudder which is rearwardly of the line aligned with the axis of axle 45. Of course, both rudder functions while the skis are submerged, but the upper rudder 67 is substantially ineffective when the ski is planing on the surface of the water.

At times the front ski is in such tilted position that the trough or wake immediately behind the tail of the ski is of such depth that the propeller is robbed of water. Such action occurs while the ski is climbing from its submerged position, that is, the front end is tilted upwardly and the rear tilted downwardly; such action also occurs in rough water when the bowed forward end of the ski engages the uphill side of a wave. To prevent such robbing, I provide a notch 70 in the tail of the front ski (see Fig. 5). This notch permits water to readily escape through the tail of the ski, at those times afore-

mentioned. Yet, the tines **71** at the tail end provide planing surfaces of high value where highly needed.

I find that better planing results are achieved by bowing the rear **38** of the rear ski **35** downwardly. It is believed that such improved result is effected because the water level is somewhat higher at the front of the rear ski than at the rear thereof because of the turbulence effected by the propeller. By bowing the rear of the ski downwardly, it follows the level of the water more closely.

The boat herein shown is approximately seven feet in length, the front ski approximately five feet in length, and the rear approximately six feet in length. The boat as shown, carrying the motor, floats at a water level approximately at the top of the ledges **33** and, when bearing an average weight man, floats at a water level at about two inches below the top of shelf **30**.

The craft can be steered readily through the rudders **67** and **68** when the rudders are submerged. When planing on the skis, the craft can be steered in the same manner as a motorcycle or bicycle is steered. That is, upon leaning of the driver to the right, the craft will turn to the right, and upon leaning to the left, the craft will turn to the left. The rudder **68** at such times functions as a keel on a boat. Too, relatively more acute turns can be made by manipulating the front ski by the handle bar.

While the form of embodiment herein shown and described constitutes a preferred form, it is to be understood that other forms may be adopted falling within the scope of the claims that follow.

I claim:

1. A watercraft, comprising in combination, an elongated floating structure having starboard and port sides; ski means consisting of a front ski and a rear ski, each of said skis extending longitudinally of, below, and midway of the sides of the floating structure, said rear ski being attached to the floating structure; means on the floating structure for supporting the front ski about a vertically-extending axis; means cooperating with the last-mentioned means for moving the front ski about said axis; a motor carried by the floating structure; and propelling means extending below the ski means and driven by the motor.

2. A watercraft as defined in claim 1, characterized in that the propelling means is disposed rearwardly of the rear of the front ski.

3. A watercraft as defined in claim 1, characterized in that the propelling means is disposed forwardly of the front of the rear ski.

4. A watercraft as defined in claim 1, characterized in that the propelling means is disposed rearwardly of the rear of the front ski and forwardly of the front of the rear ski.

5. A watercraft as defined in claim 1, characterized in that the front ski is also pivotally mounted, intermediate the front and rear thereof, about a substantially horizontal axis extending transversely of the ski.

6. A watercraft as defined in claim 1, characterized in that the front ski is also pivotally mounted on the supporting means for said front ski, intermediate the front and rear of said ski, about a substantially horizontal axis extending transversely of the front ski; and further characterized in that the forward end of the front ski is tilted upwardly from horizontal while the main body of the front ski lies substantially in a horizontal plane; and means interposed between said front ski and said supporting means yieldingly resisting movement of the front ski about said substantially horizontally-extending axis.

7. A watercraft as defined in claim 1, characterized in that the means, for supporting the front ski about a vertical axis, lies forwardly of the motor; and a driver's seat carried by said floating structure and disposed rearwardly of the motor.

8. A watercraft as defined in claim 1, characterized in that the top of the front ski carries a rudder extending longitudinally thereof.

9. A watercraft as defined in claim 1, characterized in that the front ski carries a rudder extending longitudinally thereof, the axis, about which said ski is turned, intersecting the rudder substantially forwardly of the midway point thereof.

10. A watercraft as defined in claim 1, characterized in that the propelling means is disposed directly rearwardly of the rear of the front ski, and in that the rear of the front ski is notched to provide spaced substantially horizontally and rearwardly-extending planing surfaces.

11. A watercraft as defined in claim 1, characterized in that the rear of the rear ski bows downwardly.

12. A watercraft as defined in claim 1, characterized in that the rear ski is stationary relative to the floating structure.

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