

[54] BOAT

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[58] Field of Search 115/35, 37, 39, 18 R, 18 A,
115/18 E, 42, 16; 114/57, 61, 66.5 S, 66.5 P;
74/515

[56]

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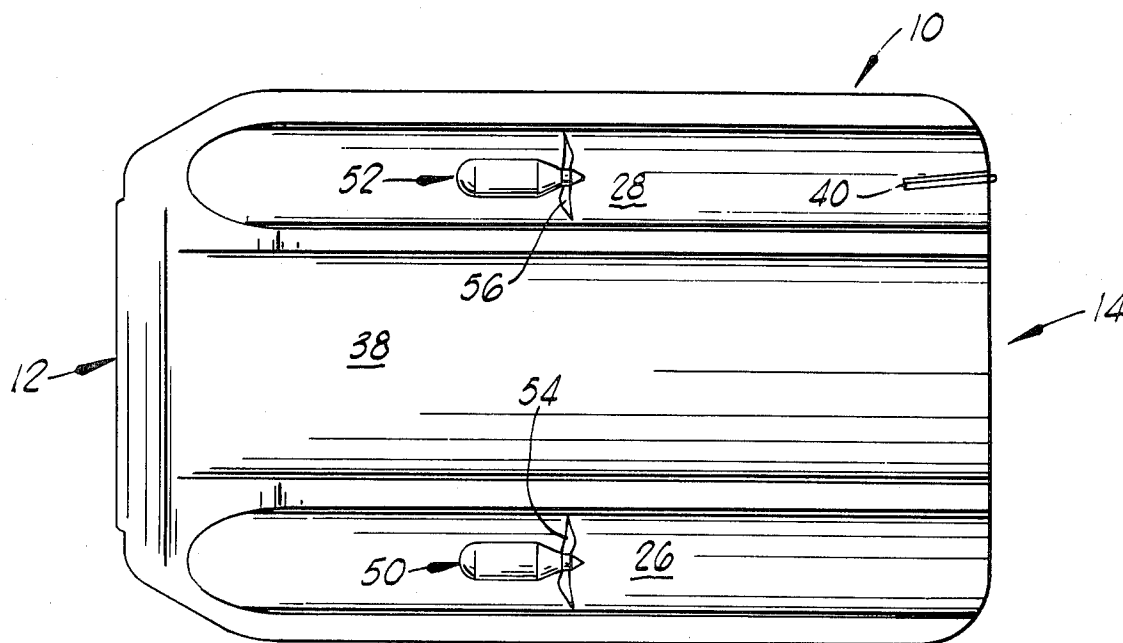
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[57]

ABSTRACT

A boat especially adapted for maneuvering in confined areas to facilitate fishing in such areas, and including a hull having water flow channels formed on opposite sides of the bottom of the hull, with screw or propeller assemblies positioned in each of the water channels for effecting propulsion and steering of the boat. The propeller assemblies are preferably electrically powered, with power being supplied through a pair of rheostat controls disposed at opposite gunwhales of the boat. The electrical circuitry includes means for reversing the direction in which a propeller or screw included in each propeller assembly is driven, and for controlling the rate at which each propeller or screw is driven in rotation. Knee actuated levers are preferably disposed inboard of the boat adjacent a fisherman's seat to facilitate control of the speed at which each of the propeller assemblies is driven.

12 Claims, 7 Drawing Figures



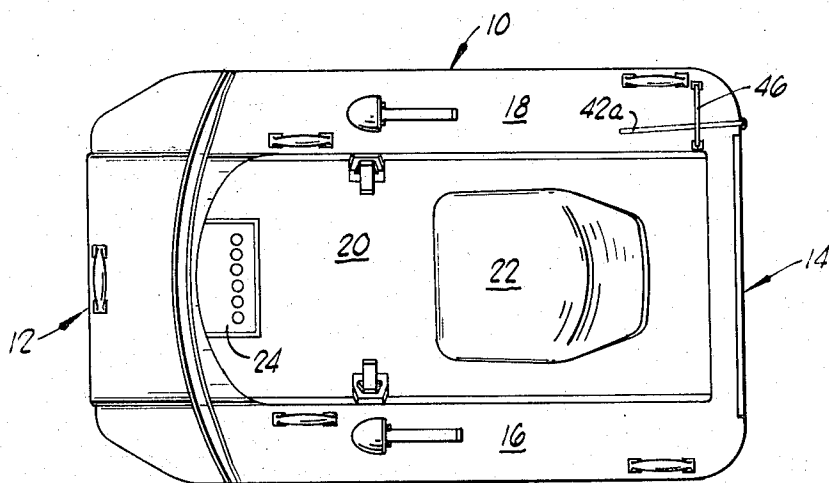


FIG. 1

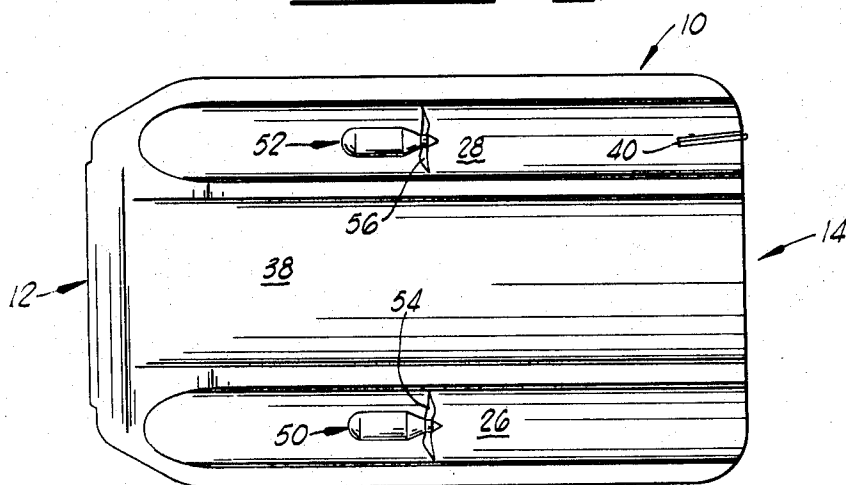


FIG. 2

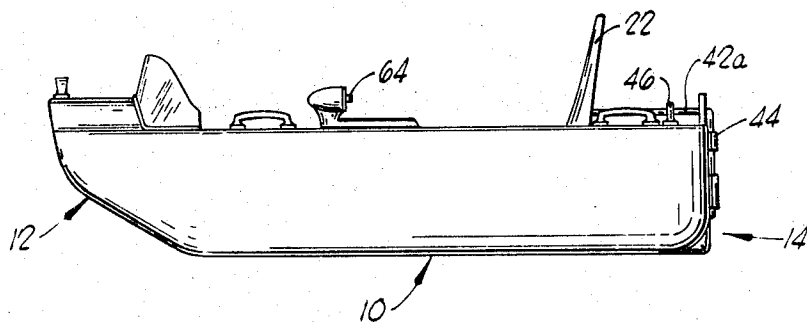
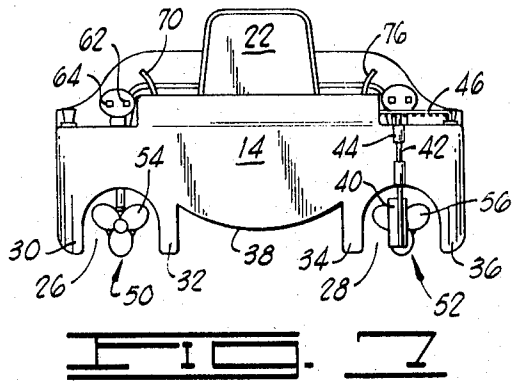
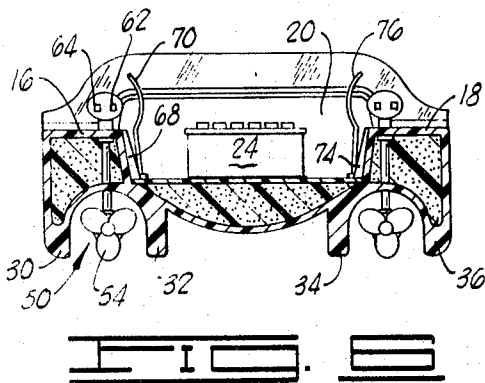
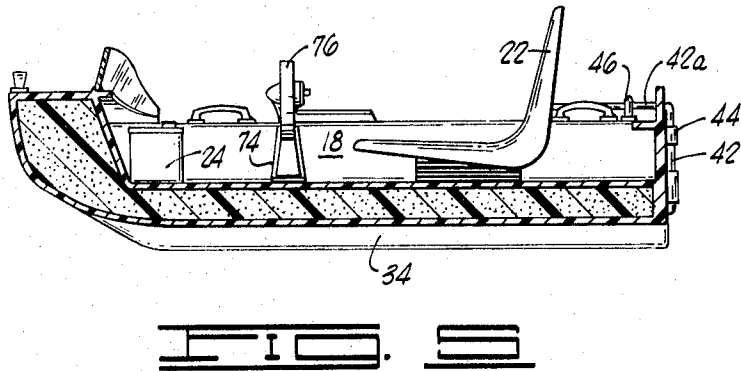
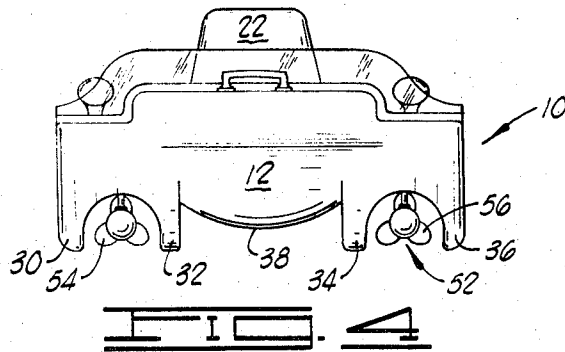


FIG. 3



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BOAT

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to small boat structures, and particularly, to shallow draft, highly maneuverable fishing boats.

2. Brief Description of the Prior Art

It is well known that twin screw boats or ships are more maneuverable than single screw vessels. In large part, this is due to the fact that when dual screws or propellers are provided, the screws can be made to act cumulatively or with opposing effects to cause the vessel to swing on its heel, and to be characterized in having a very short turning radius. Moreover, trimming or balancing the forces developed by the propulsion system for driving the vessel through the water is much easier with twin screws than with a single screw.

It has been also proposed for various purposes to provide a plurality of water flow channels or passageways in the underside of the hull of a boat or vessel to improve the efficiency of the propulsion plant, and to also improve stability of the boat and its maneuverability. Boats employing passageways or channels of this type in varying forms are shown in U.S. Pat. No. 1,726,962 to May, U.S. Pat. No. 1,991,512 to Miller and U.S. Pat. No. 3,600,733 to Lippisch. The desirability of locating dual screws or propellers of the boat in such water flow channels or passageways is recognized in the May and Miller patents.

BRIEF DESCRIPTION OF THE PRESENT INVENTION

The present invention is directed to and contemplates a highly versatile and useful fishing boat which is very stable in the water, is characterized in having high maneuverability, and is outfitted and constructed to facilitate maximum freedom of movement on the part of the fisherman to permit the fisherman to continue to devote complete attention to his fishing activity while maneuvering the boat within confined, or difficultly accessible locations. The boat, moreover, is constructed to permit relatively good speeds in the open water with quick braking power and good stability in rough water.

Broadly described, the present invention is a boat comprising a generally flat bottom hull having attached to, or formed therein, a pair of transversely spaced, substantially parallel water flow channels originating near the bow of the boat and extending aft to the stern of the boat. Disposed in each channel are a pair of propeller or screw assemblies which react upon water within the channels when the boat is afloat. The propeller assemblies are each individually controlled through controls located topside on the boat, and preferably adjacent the opposite gunwales thereof. The control to each of the propeller assemblies enables the propeller or screw constituting an element of each assembly to be driven in either direction of rotation, and at any selected speed within a wide range of speeds. It is preferred that the speed controls which are provided be susceptible to operation by the knees or feet of the fisherman so that his hands are free for manipulation of poles, rods, a dip net or other fishing paraphernalia. To the end of providing knee control, a pair of vertically projecting levers operatively connected to the movable

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contact member of a rheostat are provided in electrical circuitry carrying power to each of the propeller assemblies, and these vertically extending levers can be individually pivoted with the knee by the fisherman.

5 An important object of the present invention is to provide a highly maneuverable, stable small boat or craft which can be easily operated by a fisherman or other person without special skill or knowledge.

Another object of the invention is to provide a flat 10 bottomed, stable fishing craft having an electrical propulsion system arranged with respect to the hull of the craft so that the craft may be swung about a point and thereby achieve excellent maneuverability in confined spaces.

15 Another object of the invention is to provide a relatively inexpensive propulsion system for a fishing boat, with the system being arranged to permit control of speed and maneuverability of the boat by the use of the fisherman's knees.

20 In addition to the described objects and advantages, additional objects and advantages will become apparent as the following detailed description of the invention is read in conjunction with the accompanying drawings which illustrate the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top plan view of a boat constructed in accordance with the present invention.

FIG. 2 is a bottom plan view of a boat constructed in accordance with the present invention.

FIG. 3 is a side elevation view of a boat constructed in accordance with the present invention.

FIG. 4 is a front elevation view of the boat of the invention as it appears when viewed from forward of the bow.

FIG. 5 is a longitudinal sectional view taken along the longitudinal center line of the boat shown in FIG. 1.

FIG. 6 is a transverse sectional view taken along a plane extending transversely across the boat of FIG. 1 from beam to beam at substantially midships of the boat.

FIG. 7 is a rear elevational view of the boat of the invention as it appears when viewed from aft of the stern of the boat.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT OF THE INVENTION

Referring initially to FIG. 1 of the drawings, the boat of the invention is shown therein, and includes a hull designated generally by reference numeral 10. The hull may be constructed in various ways and of various materials but, in the preferred embodiment of the invention, is constructed of fiberglass. The hull of the boat includes a bow 12 and a stern 14 as is conventional. The gunwales of the boat 16 and 18 are relatively broad or thick in their athwartships dimension and define between them, a central well 20 which extends fore and aft in the boat. The central well 20 accommodates a suitable seat 22 for an occupant of the boat such as a fisherman. Disposed at some convenient location in the well 20, such as the forward end thereof, is a storage battery 24 for supplying electrical power for a purpose hereinafter described.

Referring to FIG. 2 of the drawings, the appearance of the bottom of the hull 10 of the boat is here shown in detail. It will be perceived that the bottom of the hull 10 is, in the illustrated embodiment, shaped or molded

to provide a pair of elongated water flow channels 26 and 28 disposed at opposite sides of the hull and extending substantially parallel to each other from the bow 12 to the stern 14 of the boat. Each of the water flow channels 26 and 28 is concave in cross sectional configuration. The channel 26 is defined between a pair of downwardly projecting chines 30 and 32, and the channel 28 is defined between a pair of downwardly projecting chines 34 and 36. Disposed inboard between the chines 32 and 34 is a convex surface 38 forming the central portion of the hull.

Mounted on the stern 14 of the hull 10, in a position in alignment with the flow channel 28, is a trimming vane or rudder 40. The trimming vane is a flat plate which has secured along one edge thereof, a rod 42 which extends vertically and passes through a pivot sleeve 44 secured to the hull 10. Above the pivot sleeve 44, the rod 42 is bent through a right angle to provide a handle portion thereof, 42a, which projects horizontally and bears against a U-shaped stop bracket 46 which passes across the top thereof and has its legs embedded in the hull 10. The stop bracket 46 is provided with a series of serrations or notches along the web portion thereof, which notches are dimensioned to receive and retain the handle portion 42a of the rod 42. The rod 42 has sufficient flexibility and resiliency that it can be manually depressed to disengage it from the stop bracket 46 and permit the trimming vane 40 to be pivoted about a vertical axis so as to vary the extent to which it obstructs water flow through the flow channel 28. The function of the trimming vane 40 will be explained in greater detail hereinafter.

Disposed in each of the flow channels 26 and 28 at a location substantially midway of the length thereof, (and thus midway between the bow 12 and stern 14 of the hull 10), is a propeller or screw assembly. The propeller assembly positioned in the flow channel 26 is designated generally by reference numeral 50, and the propeller assembly which is located in the flow channel 28 is designated generally by reference numeral 52. Each of the propeller assemblies includes a propeller or screw - these being identified by reference numeral 54 in the case of the propeller assembly 50, and 56 in the case of the propeller assembly 52. It will be noted in referring to FIG. 2 that the propellers 54 and 56 face aft, and in a preferred embodiment of the invention, the propeller assemblies 50 and 52 are immovably mounted and do not swivel or pivot about vertical axes. It is also a preferred construction to drive the propellers 54 and 56 in rotation by electrical power.

The electrical conduits or cables supplying electrical power to the motors (not shown) forming a portion of the propeller assemblies 50 and 52, extend vertically through the hull 10 inside of rigid sleeves and are ultimately connected, through certain intervening circuit elements hereinafter to be described, to the battery 24.

An important aspect of the present invention is the individual and independent control which the power supply system of the invention affords with respect to each of the propeller assemblies 50 and 52. To facilitate such independent control, each of the electrical circuits to the two propeller assemblies includes a means for driving the propeller forming a part thereof in either direction of rotation and at substantially any selected speed within a wide range. In the electrical circuitry to the propeller assembly 50, there is thus in-

cluded an on-off switch 64 and a forward and reverse switch 62, both disposed within a suitable switch housing 64 mounted topside on the gunwhale 14. It will be noted that the switches 62 and 64 are easily accessible to a person sitting in the seat 22. There is further provided in the circuitry supplying power from the battery 24 to the propeller assembly 50, an electrical rheostat (not shown) which is housed within a housing 68 and having a wiper or movable arm thereof connected to a vertically extending lever 70. The rheostat actuating lever 70 is constructed to be operable through the use of the knee of a person sitting in the seat 22. To this end, the lever 70 is preferably spring biased to a slow or zero speed position, and can be forced forward by knee pressure against the bias of the return spring to increase the speed at which the propeller 54 is driven. A similar rheostat assembly is positioned on the opposite side of the hull adjacent the gunwhale 18, and includes a rheostat housing 74 and a vertically projecting kneeoperable lever 76.

The functions of the described on-off and forward-reversing switches, as well as of the rheostat, are the conventional function derived from such structures as they are used in the electrical arts. They are serially connected in the electrical circuit between the battery 24 and the respective propeller assemblies 50 and 52, and collectively function to provide precise control of the speed and direction of rotation of the propellers in each of these assemblies.

In the operation of the boat of the invention, an operator of the boat, such as a fisherman, seated in the seat 22 maneuvers the boat during the major portion of the time it is in use with the knees alone. Occasionally, however, it will be necessary to use one or more of the several switches which are provided. The controls which are provided permit the fisherman to use a great number of combinations of forces to swing the boat through an arc or upon a point in substantially any manner desired, or to drive the boat ahead or astern at selected speeds. Thus, to swing the boat about a turning point with an essentially zero turning radius, the fisherman will turn both on-off switches to the "on" position while the rheostat control levers 72 and 76 are at a zero speed or low speed position. One of the forward-reverse switches is then turned to the forward position, and the other to the reverse position. This will cause the propellers 54 and 56 to be rotated in opposite directions so that one is tending to drive the boat forward, and the other is tending to drive the boat astern. Both knees of the fisherman (or the hands, if desired for more sensitive control) are then used to move the levers 72 and 76 very slowly forward against the return bias of the springs hereinbefore described. If done correctly, this has the effect of driving each of the propellers 54 and 56 at the same speed, although in opposite directions. In large part because of this, but also in part because of the central or midship's location of the propeller assemblies 50 and 52, the boat will pivot directly upon a point which is substantially centrally located beneath the hull 10, and there will be essentially no movement in either a forward or sternwise direction.

On the occasion of such a turning movement, and perhaps more frequently during the underway movement of the boat in a forward direction at a substantial speed, it is sometimes difficult to precisely balance the thrust developed by each of the propeller assemblies 50 and 52 so that the boat moves in a straight line. In such

an eventuality, the thrust developed by the propeller assemblies can be balanced by the use of the trimming vane or rudder 40. It will be noted in referring to this structure as depicted in the drawings, and as previously described, that the trimming vane 40 can be pivoted about a vertical axis to vary the degree to which it obstructs the flow of water through the flow channel 28. Such obstruction also permits selected variation of the effective thrust developed by the propeller 56 of the assembly 52, and in this way, this thrust may be balanced with the thrust of the propeller 54 of the assembly 50, and straight line movement can be achieved. The same balancing effect can be utilized for trimming a backing or rearward motion or movement of the boat.

It will be perceived that the provision of the knee controlled levers 72 and 76 for the control of the most frequently varied control force, i.e. the speed of rotation of the propellers 54 and 56, permits the operator of the boat to carry out most of the necessary or desirable maneuvers or speed changes without the necessity for use of the hands. Such activities as fishing can thus proceed without interruption during the use of the boat and control of the speed thereof with the knees. The suitability of the boat for fishing is further greatly enhanced by the maneuverability of the craft which permits it to be turned within an extremely short turning radius, or even upon a point beneath the center of the hull.

The stability of the boat in rough water is also quite good due to the configuration of the bottom of the hull 10 and the provision of a multiplicity of downwardly projecting chines.

Although a specific embodiment of the invention has been herein described in order to illustrate the examples underlying the invention, it is to be understood that various changes and innovations in the described and illustrated structure can be effected with continued dependence and reliance upon such principles. Changes and innovations of this type are therefore considered to be within the spirit and scope of the invention except as the same may be necessarily limited by the appended claims or reasonable equivalents thereof.

What is claimed is:

1. A boat comprising:

a hull having a pair of spaced water flow channels disposed on opposite sides of the bottom thereof and extending aft from the bow to the stern of the boat, said flow channels opening downwardly in the water over their entire length, having a concave upper side of semi-circular configuration, and being of substantially the same depth from the bow to the stern of the boat;

a propeller assembly disposed in each of said water flow channels, each of said assemblies including a propeller; and

means for individually and independently controlling the speed and direction of rotation of each of said propellers.

2. A boat as defined in claim 1 wherein said means for individually controlling the speed and direction of rotation of each of said propellers comprises electrical circuitry for delivering electrical power to each of said propeller assemblies, said circuitry including:

an on-off switch for opening and closing the circuit to each of said assemblies;

a rheostat in the circuit to each of said assemblies; and

a forward and reverse switch in each of said circuits for reversing the direction of flow of current in each of said circuits.

3. A boat as defined in claim 1 wherein each of said propeller assemblies is located substantially midway between the bow and stern of said hull, and the propeller of each of said propeller assemblies is positioned substantially entirely within said respective flow channel whereby the propellers are not fouled upon grounding of the boat.

4. A boat as defined in claim 1 wherein said means for individually and independently controlling the speed and direction of rotation of each of said propellers comprises knee-operable lever means movable to vary the speed of rotation of the propellers.

5. A boat as defined in claim 1 and further characterized as including a trimming vane positioned in at least one of said water flow channels at the rear end thereof under the stern of said boat and pivotally mounted on said hull for pivotation about an axis aligned with the center of the propeller disposed in said one water flow channel for selective obstruction of water flow through the channel in which it is mounted, said trimming vane being of substantially monoplanar configuration and pivotal about a vertical axis.

6. A boat as defined in claim 4 wherein said knee-operable lever means comprises a pair of spaced levers each disposed adjacent a gunwhale of the boat and each connected in an electrical circuit to one of said propeller assemblies.

7. A boat as defined in claim 6 wherein the electrical circuit to each of said propeller assemblies is further characterized in including:

an on-off switch for opening and closing the respective circuit;

a rheostat in the respective circuit operably connected to one of said knee-operable levers; and

a forward and reverse switch in the respective circuit for reversing the direction of flow of current in each of said circuits.

8. A boat as defined in claim 4 wherein each of said propeller assemblies is located substantially midway between the bow and stern of said hull.

9. A boat as defined in claim 8 and further characterized as including a trimming vane positioned in at least one of said water flow channels and pivotally mounted on said hull for selective obstruction of said water flow through the channel in which it is mounted, said trimming vane having a handle connected thereto for manipulating the trimming vane and projecting over the stern of the boat; and

a seat in the boat positioned between said knee operable rheostat lever means and said handle connected to said trimming vane to permit the operator of the boat to concurrently manipulate with the knees, the knee operable rheostat lever means and the handle connected to the trimming vane.

10. A boat as defined in claim 6 wherein said hull is characterized in having a central well extending fore and aft topside on said hull and having said gunwhales on opposite sides thereof and said levers located therein.

11. A boat comprising:

a hull having a central well and a pair of gunwhales outboard thereof on opposite sides thereof, said

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hull defining a pair of horizontally spaced, elongated channels at the bottom of said hull and opening downwardly into the water;
dual reversible motors under said hull and disposed on opposite sides thereof with one of said motors located in each of said channels and located substantially midway between the bow and stern of said hull; and
means adjacent each gunwale of said hull at the upper side thereof for individually and independently controlling the direction and speed of rotation of each of said motors, said means adjacent the gunwale for controlling the direction and speed of

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rotation of each of said motors comprising:
a pair of vertically projecting rheostat levers spaced in an arhwardships direction from each other top-side of said hull to facilitate extension of the legs of a fisherman between said rheostat levers and operation of each of said levers with one of the knees of the fisherman.
12. A boat as defined in claim 11 and further characterized as including a trimming rudder pivotally mounted on the stern of said hull directly aft of one of said motors.

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