A motorized swimming aid including a boat shaped hull with a pair of handles at the rear end thereof to be grasped by a swimmer and be pulled along the surface of the water. The center of gravity of the swimming aid is located within the hull laterally aligned with and longitudinally spaced from the center of buoyancy to generate a moment of force on the hull to lift the handles out of the water. A motor is attached to the hull to generate a moment of force on the hull when it is operating to force the handles toward the surface of the water. The motor is powered by two batteries selectively connectable to the motor in parallel or in series to vary the operating speed of the motor.
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SHEET 1 OF 3

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Fig 1

Fig 2

Fig 3
MOTORIZED SWIMMING AID

BACKGROUND OF THE INVENTION

Various motorized swimming aids are on the market today to propel a swimmer through the water. Such aids have not generally been successful because they were too heavy to easily transport, too expensive to build and operate to be economically feasible or sometimes dangerous to the swimmer.

SUMMARY OF THE INVENTION

These and other problems and disadvantages associated with prior art motorized swimming aids are overcome by the invention disclosed herein by providing a motorized swimming aid which is lightweight so as to be easily transported, inexpensive to construct and maintain and safe in operation.

The apparatus of the invention includes a boat shaped hull with a pair of handles at the rear end thereof to be grasped by a swimmer and be pulled along the surface of the water. The center of gravity of the apparatus is located within the hull laterally aligned with and longitudinally spaced from the center of buoyancy to generate a moment of force on the hull to lift the handles out of the water. A motor is attached to the hull to generate a moment of force on the hull when it is operating to force the handles toward the surface of the water. The motor is powered by two batteries selectively connectable to the motor in parallel or in series to vary the operating speed of the motor.

When the apparatus is stopped in the water, the handles are slightly raised above the surface so that a swimmer can easily grasp same. When the swimmer grasps the handle, the motor is operated to drive the apparatus forward while at the same time causing the handles to be lowered to a position generally at the surface of the water.

These and other features and advantages of the invention will become more fully understood upon consideration of the following specification and accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views and in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an illustration of the apparatus of the invention in use;
FIG. 2 is a top plan view of the apparatus embodying the invention of FIG. 1;
FIG. 3 is a side view of the apparatus of FIG. 1 with portions thereof broken away to show the interior construction thereof;
FIG. 4 is an enlarged cross-sectional view taken along line 4—4 in FIG. 3;
FIG. 5 is a cross-sectional view taken along line 5—5 in FIG. 2;
FIG. 6 is a front elevational view of the invention using an alternate hull configuration; and,
FIG. 7 is a side view of the apparatus in FIG. 6.

These figures and the following detailed description disclose specific embodiments of the invention, however, it is to be understood that the inventive concept is not limited thereto since it may be embodied in other forms.

DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

Referring to FIGS. 1-5, the first embodiment of the invention is a motorized swimming aid 10 which includes generally a floatable hull 11, a drive means 12 for propelling the hull through the water, and control means 14 for selectively controlling the operation of the drive means 12. A swimmer holds onto the rear end of hull 11 and manipulates the control means 14 to cause the drive means 12 to propel the hull 11 through the water and tow the swimmer therebehind along the surface of the water.

As best seen in FIGS. 2–3, the hull 11 includes a bottom skin 15 formed in a boat bottom configuration so that its outer surface 16 in contact with the water is streamlined. Skin 15 defines a central cavity 18 therein with an upwardly facing outwardly flaring open top 19. A liner assembly 20 closes the open top 19 of bottom skin 15. The liner assembly 20 includes a deck skin 21 that is generally flat with a configuration to just close the open top 19 and is joined to the upper edges of the open top by means such as glue or fasteners. The outer juxtaposed edges of the deck skin 21 and bottom skin 15 are covered with a rubber bumper 22 to present a soft smooth edge for safety.

A pair of handles 24 are formed at the rear edge of the bottom and deck skin joint by forming a pair of cutouts 25 through the joint to provide the handles 24 in tubular form. The handles 24 are covered with flexible rubber sleeves 26 as best seen in FIG. 5 and a circumferentially extending arcuate opening 28 is provided in one of the handles 24 to receive the control means 14 as will be explained. An indentation 29 may be provided in the joint between the handles 24.

The deck skin 21 is provided with a central generally rectangular recess 30 with an upwarding head 31 around the edge thereof. The recess 30 is defined by side walls 32 depending below the surface of the deck skin 21 and a bottom wall 34 is integral with and joins the side walls 32. The bottom wall 34 defines a rectangular battery receiving opening 35 therein. The liner assembly 20 also includes a battery case 36 constructed and arranged to slidably fit within the opening 35. Case 36 has upstanding sides 38 closed by a bottom 39 and the upper edges of sides 38 are provided with outwardly extending flanges 40 which overlie the bottom wall 34 of recess 30 about the opening 35 to support the battery case 36 within opening 35. The battery case 36 has an upwardly opening battery receiving cavity 41 therein. While the configuration of cavity 41 may be varied to receive different batteries, it is illustrated arranged to receive two batteries 42 of the type used in motorcycles. The particular construction shown allows the battery case 36 with the batteries 42 therein to be removed upwardly out of the opening 35. A carrying strap 44 may be provided to assist in the lifting of case 36 from opening 35.

That portion of the cavity between skin 15 and liner assembly 20 is filled with a foamed plastic material 45 as seen in FIG. 4 to further insure the buoyancy of the aid 10 even though the hull 11 may be punctured. The material 45 also serves to waterproof the wiring as will be apparent.

A hatch 50 is provided to cover the recess 30. Hatch 50 is a generally flat sheet member with a plurality of longitudinally extending ribs 51 to reinforce same.
Flanges 52 are provided along the edges of hatch 50 adapted to overlie the bead 31 around recess 30. A gasket 54 is provided under flanges 52 to engage bead 31 and seal the joint. A plurality of depending catches 55 are provided on the bottom of hatch 50 that co-operate with an inwardly projecting rib 56 on side walls 32 to hold hatch 50 in place.

The drive means 12, in addition to the batteries 42 which serve as the power source, include a motor assembly 60 of the type commonly known as a trolling unit. The assembly 60 includes a streamlined housing 61 which mounts a motor with a drive shaft 62 protruding from the rear end of housing 61. A propeller 64 is carried by shaft 62 and a guard assembly 65 is positioned about propeller 64 and carried by housing 61 to protect the swimmer. The assembly 60 is attached to the hull 11 by a stanchion 66 attached to housing 61 and slidably received in a passage 68 in hull 11. The upper end of stanchion 66 fits within a downwardly opening recess 69 defined in the deck skin 21. An annular bracket 70 may be used to secure the lower end of the stanchion 66 to hull 11 and seal the lower end of passage 68 at the bottom skin 15. The upper end of stanchion 66 may be tapped and a fastener 71 screwed therein through a hole in the deck skin 21 to secure same.

The control means 14 includes a selector switch 75 and a power switch assembly 76 in series for selectively connecting the batteries 42 to the motor assembly 60 to rotate the propeller 64. The selector switch 75 is of the waterproof type and is of known construction to selectively connect the batteries 42 in parallel or in series to vary the speed of the motor assembly 60.

The power switch assembly 76 includes a normally open switch 78 carried on a mount 79 within the opening 28 in handle 24 as seen in FIG. 5. The switch arm 80 of switch 78 is controlled by a driver 81 within opening 28 under sleeve 26 and is movable mounted on mount 79 through springs 82. The springs 82 urge driver 81 away from arm 80 so that power will be supplied to the motor assembly 60 only when the handle 24 is grasped and squeezed to depress driver 81 against switch arm 80 and springs 82 to close switch 78.

While different types of batteries 42 may be used, those illustrated are wet cell, D-C type with a 12 volt capacity. Thus, connecting them in parallel supplies 12 volts to the motor assembly 60 for a first speed and connecting them in series supplies 24 volts to motor assembly 60 for a second higher speed. For facilitating removal of batteries 42, quick disconnect terminal clamps 84 may be used to connect the battery cables 86 to the battery terminals.

An alternate hull 111 is shown in FIGS. 6 and 7 wherein the bottom skin 115 has an outer surface 119 with a catamaran configuration with spaced parallel and longitudinally extending pontoons 123 that depend on opposite sides of drive means 112 to define centrally located longitudinally extending recess 127 thereunder within which the drive means 112 lies. The remaining parts correspond to those of the first embodiment and have corresponding reference numbers displaced by 100.

Both aids 10 and 110 have a center of gravity CG and a center of buoyancy CB which are spaced along the centerline CL thereof. The centers CG and CB are thus laterally aligned so as to cause the aid to right itself when tilted from side to side. The center of gravity CG, however, is displaced forwardly of the center of buoyancy CB a prescribed distance d, so as to cause the hull 11 or 111 to tip forwardly by the moment of force generated as shown by dashed lines in FIG. 3 and cause the handles 24 to be lifted out of the water until the center of buoyancy has shifted forward into position CB' in vertical alignment with the center of gravity CG. When the motor operates, the moment of force generated thereby causes the hull 11 or 111 to tilt back to the position shown by solid lines in FIG. 3. This serves to lift the handles 24 so that the swimmer may easily grasp them when the aid is at rest but shifts down to exert a force generally parallel with the surface of the water when the swimmer is under tow.

While specific embodiments of the invention have been described herein, it is to be understood that full use may be made of modifications, substitutions and equivalents without departing from the scope of the inventive concept.

I claim:

1. A motorized swimming aid including:
   a boat shaped hull comprising:
   a bottom skin defining the outer shape of said hull and an open top cavity therein;
   a liner assembly positioned to close said cavity and defining an open top battery receiving recess therein;
   a pair of spaced apart handles at the rear end of said hull, said bottom skin and liner assembly defining a cutout just forward of each of said handles to allow said handles to be grasped, one of said handles including a power switch positioned in said handle adapted to be actuated when said handle is grasped;
   a buoyant foam plastic material filling said cavity between said bottom skin and said liner assembly; and,
   a hatch selectively closing said battery receiving recess;

   drive means comprising:
   an electric trolling unit having a propeller operatively associated therewith;
   a support member positioned in said hull and projecting therebetween at the forward end thereof, said support member mounting said trolling unit under the forward end of said hull so that the centerline of said unit is substantially vertically aligned with, spaced below, and generally parallel to the longitudinal centerline of said hull for moving said aid through the water; and
   electrical storage battery means carried within said battery receiving recess,

   said aid having a center of gravity and center of buoyancy, the center of gravity and center of buoyancy longitudinally spaced and laterally aligned to generate a first moment of force on said hull when said hull is placed in the water to cause said handle means to be lifted from the water, said trolling unit exerting a second moment of force on said hull opposite to the first moment of force to lower said handles toward the water when said trolling unit is operating, and said power switch selectively and operatively connecting said battery means to said trolling unit to operate same when said handle is grasped.

2. The swimming aid of claim 1 wherein said storage battery means includes a plurality of storage batteries.
and wherein said drive means further includes a selector switch in series with said power switch for alternatively connecting said batteries to said trolling unit upon actuation of said power switch in parallel and in series.

3. The swimming aid of claim 2 wherein said liner assembly includes a deck skin conforming in shape to the top of said bottom skin and attached thereto to close said cavity, said deck skin defining an opening there-through and including a support ledge about said opening, and a battery case defining said battery receiving recess, said battery case including a support flange engaged with said support ledge to removably support said battery case within said cavity.

4. The swimming aid of claim 3 wherein said handle defines an opening therein, said power switch mounted within said opening, said one handle further including a driver movably mounted within said opening to actuate said power switch and a resilient sleeve member positioned around said handle and covering said driver yet allowing said driver to be manually moved to actuate said power switch.

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