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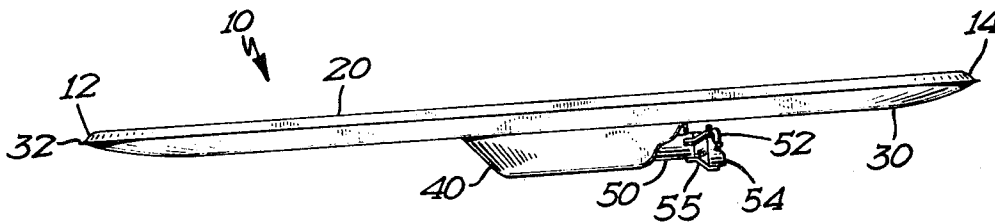
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[54] **MOTORIZED SURFBOARD**
5 Claims, 5 Drawing Figs.

[52] U.S. Cl. 115/70
[51] Int. Cl. B63b 3/00,
B63b 35/72
[50] Field of Search 115/70

ABSTRACT: This invention is directed to a motorized surfboard which utilizes a streamlined keel section on the bottom planing surface for housing an energizing battery source and shielding and streamlining a motor with a shroud thereon positioned behind the keel section.



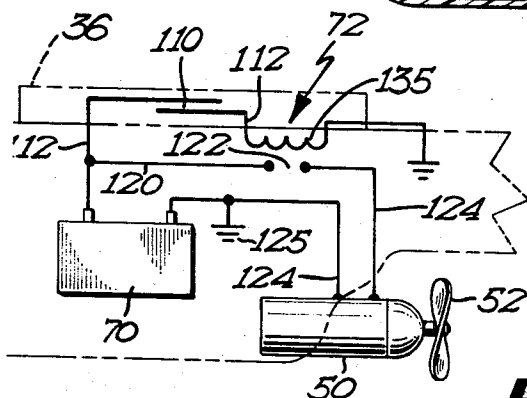
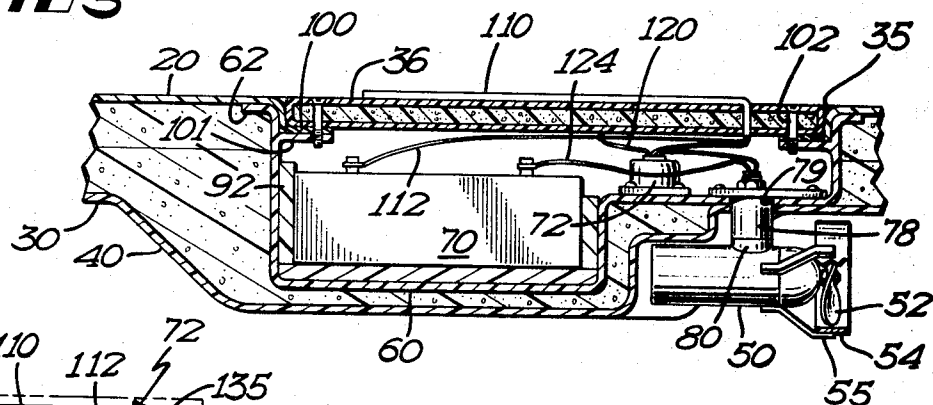
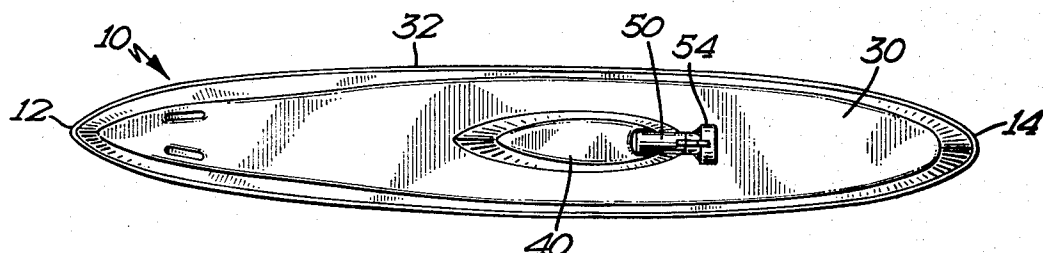
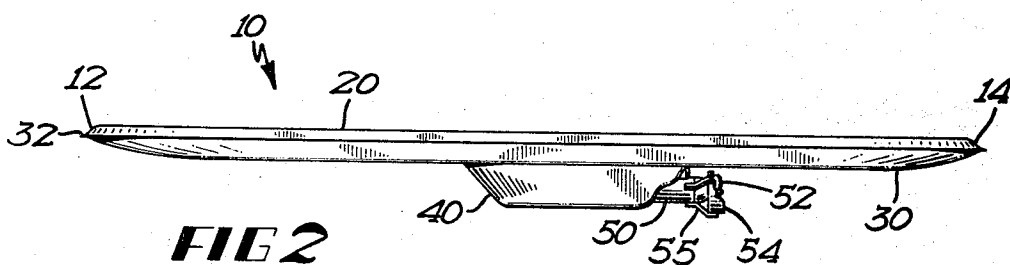
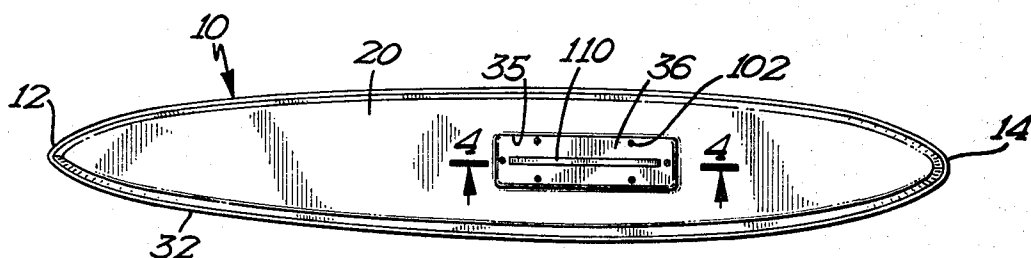


FIG 4

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MOTORIZED SURFBOARD

My invention relates to motorized surfboards and more particularly to an improved motorized surfboard which retains all of the characteristics of a conventional surfboard and includes provisions for propulsion with a self-contained motor and energizing source therefore.

Motorized skis, surfboards, sleds, barges and the equivalent structures have been known and used in the past. These prior structures have been generally complex and costly in design, have been cumbersome to use and transport and have lacked the operating characteristics of a surfboard. In these prior designs, the motor and/or propeller is projected directly into the water from the planing surface to represent a significant resistance to motion of the surfboard. It further presented an obstruction which was hazardous to the user in the event the board is overturned. Such prior designs, because of their overall profiles and construction, required a large number of parts and did not lend themselves to molding type construction.

The present invention is directed to an improved surfboard design which utilizes a battery source mounted within the board and in a keel section to maintain a minimum thickness of the board to retain surfboard characteristics. The electric motor is shrouded and streamlined with the keel section to provide a minimum of resistance to movement of the board through the water while generally positioning the motor so as not to project as an obstruction to persons or objects around the same and with the propeller shielded so as to eliminate any safety hazard in its use. The improved surfboard design is adapted for two-part molded construction and employs appropriate controls positioned on and within the board such that the board retains the overall surfboard characteristics and appearance and is readily easy to use and transport.

Therefore, it is a principal object of this invention to provide an improved electric motorized surfboard.

Another object of this invention is to provide an improved motorized surfboard in which the appearance and profile retains surfboard characteristics for normal surfboard operation.

Another object of this invention is to provide an improved motorized surfboard which may be used without the motor as a conventional surfboard.

A still further object of this invention is to provide an improved motorized surfboard which is simple in design, easy to use and maintain and is relatively low in cost.

These and other objects of this invention will be come apparent from a reading of the attached description, together with the drawings wherein:

FIG. 1 is a plan view of the improved motorized surfboard;

FIG. 2 is a side elevation view of the improved motorized surfboard;

FIG. 3 is a bottom view of the improved motorized surfboard;

FIG. 4 is a sectional view of the improved motorized surfboard of FIG. 1 taken along the lines 4-4 therein; and

FIG. 5 is a schematic circuit diagram for the control circuit of the improved motorized surfboard.

My improved motorized surfboard is shown in plan or top view of FIG. 1 as having the general outline of a conventional surfboard. Thus, in FIG. 1, it will be seen that the surfboard which is generally indicated at 10 is an elongated structure, generally elliptical in form, which is tapered or curved toward the forward extremity, as indicated at 12, with a slightly sharper taper than the rearward extremity, indicated at 14. Further, the improved surfboard employs a two-part construction; namely, a top or deck portion 20 and a bottom or hull portion 30, each of which have lip type edges, indicated at 32, which mate together for sealing purposes. The surfboard may be made of varying types of materials but is preferably made in two parts of a molded fiberglass or a vacuum molded thermoformable plastic such as acrylonitrile-butadiene-styrene. As will be later noted, these parts are sealed at the lip portions to form a composite integral unit. The deck portion 20 is flat throughout its extent and the deck has the same height dimen-

sion throughout. Positioned rearward on the deck portion is an opening 35 in which is positioned a cover plate 36. The hull portion of the surfboard is also preferably formed on a mold and has generally a flat bottom surface which is tapered along the sides and at the forward and rearward edges extending from the lip portions to give a generally sloped hull. The maximum width dimension of both the deck and hull portions of the surfboard generally is slightly aft of the midpoint along the extent of the same and the hull portion includes a keel section 40 projecting therefrom, which keel section is located midway between the sides of the hull and generally at the center line of the same. It has a sloped prow section, curved sides and curved aft section with a generally flat bottom. The maximum depth dimension of the hull, at the keel section, is located when the hull and deck portions are combined opposite the aperture 35 in which the cover is positioned and the keel section serves as the motor mounting to streamline the same and also to mount the battery of the surfboard, as will be later defined. The keel section 40 and its aft portion includes a recessed portion into which one end of the motor 50 of the surfboard is positioned. This recessed portion has tapered sides to define the generally rearward and inwardly curved portion of the aft section of the keel. Motor 50 has a propeller 52 with a shroud 54 surrounding the same, the shroud being connected through the motor through bracing 55 integrally secured thereto. The cylindrical shroud 54 is of such width dimension that it generally forms a restricted passage with the propeller to give it venturi effect for water flow across the propeller. It is also generally of the same width and depth dimension when mounted on the motor with respect to the keel portions so that it mates with the cross-sectional outline of the keel section so as not to provide a projecting surface or increase drag of the keel section.

The improved surfboard at the deck portion 20 includes a frame or box-like mounting member 60 which is mounted through flanges 62 and secured to the deck surrounding the aperture 35 therein with the mounting member 60 extending down into or through the hull portion and into the keel section thereof. This box-like structure is accessible by removing of the cover 36 in the deck portion and serves as the mounting structure for a battery 70, a control contactor 72, and appropriate wiring connecting the battery and the motor 50.

Motor 50 is mounted by means of a cylindrical flanged collar 78 which extends through an aperture 79 in the box structure 60 and an aperture in the hull portion. As will be seen in the sectional view of FIG. 4, motor 50 has a cylindrical mounting part 80 projecting from the same, the motor body being generally cylindrical in outline with the mounting part extending normal thereto. The mounting part 80 extends through the collar 78 and is suitably secured thereto by a threaded surface on the mounting part 80 and a lock nut 90 threaded onto the same above the flange portion of the collar securing the same in the cylindrical mounting 78. The electrical wiring for the motor extends through the cylindrical mounting part and lock nut to be exposed within the interior of the mounting member 60 for connection thereto. The interior of the surfboard formed by the hull and deck parts after sealing is filled with a foamed polystyrene or polyurethane to give the board positive flotation in the event of rupture of the same. In addition, the filling provides rigidity to the molded fiberglass construction of the hull and deck portions. The mounting member 60 may include supporting foam strips 92 positioned around the battery 70 to snugly secure the same therein. The cover plate within the aperture 35 is sealed through suitable gasket type seals 100 to prevent entrance of moisture into the mounting member 60. The cover is held in position on a flange 101 of the mounting member 60 through suitable screws, such as is indicated at 102.

In addition, the exposed surface of the cover 36 has a control strip 110 positioned thereon through suitable means such as gluing with control wires extending therefrom, such as is indicated at 112, into the mounting member 60 of the surfboard for control purposes.

As will be seen in FIG. 5, the battery 70 is connected through a main conductor 120 to the contacts 122 of the relay 72 and through conductors 124 to the motor 50 with the motor being grounded at 125 to provide the energization of the circuit for the motor from the battery. A control circuit extends to the tape switch 110 from the battery source through conductors 112 and coil 135 of the relay 72, with the control circuit being connected at the relay to the ground 125. Thus, the tape switch, when closed, will energize the contactor 72 to connect the motor 50 to the battery source for rotation of the propeller propelling the surfboard.

In my improved motorized surfboard, we have found that any type of wet-cell battery, preferably a 12 volt source, may be utilized for energization purposes of the motor. Any suitable sealed and submersible motor may be employed and we have found that a motor identified as the Submersible Sealed 12 volt unit manufactured by the A. F. Scheppman and Son Mfg. Co. of Okabena, Minnesota is suitable for this purpose. In addition, the tape switch may vary in form and a tape switch identified as type BP ribbon switch, manufactured by Tapeswitch Corporation of America, Elmont, New York provides a suitable operating control for the motor. The relay contact may take any suitable form. In addition to the polyurethane filling of the board, any other flotation and structurally rigid material such as styrofoam and/or balsawood may be supplied for this purpose. Further, while I have disclosed a molded fiberglass construction for the exterior shell or deck and hull portions of the surfboard, other materials may similarly be employed.

My improved surfboard retains all the operating characteristics of a conventional surfboard in that it may be used on water without motor energization. The improved board provides sufficient flotation to enable a rider to stand on the same and ride waves in a conventional manner. Control of my improved board is effected by a rider standing on the tape switch positioned on the cover 36. A pressure of approximately 8 ounces placed on the tape will close the circuit through the tape to effect energization of the motor from the battery source through the control contactor 72. Thus, the rider may stand, lean, sit, or otherwise apply pressure to the tape while riding or holding onto the board and operate the same. Steering of the board is conventional either by shifting the weight or position thereon. The keel section is streamlined and provides a cover for the motor 50 and propeller such that they present no obstruction to the rider or swimmers to become a safety hazard. In addition, water flow through or by the keel section will enter around the motor housing and through the shroud to the propeller for conventional propulsion with the shroud providing a protective cover for the rotating propeller and at the same time producing a slight venturi effect to increase speed of propulsion. The motor is positioned in the recessed portion of the keel to eliminate drag, improving the driving characteristics of the surfboard. The motor and the battery within the battery mounting member integral with or positioned in the board, are sealed to be submersible and the battery mounting member section is protected by a sealed cover which may be opened for access for charging of the battery or

replacement of the same upon removal of the securing screws therein. The styrofoam or polyurethane filling of the board supplies rigidity to the same and insures positive flotation of the board in the event of leakage or rupture of the same.

In considering this invention, it should be remembered that the present disclosure is intended to be illustrative only.

I claim:

1. A motorized surfboard comprising an elongated body member having a longitudinally extending planing surface and a substantially flat top surface with tapered front and rear extremities, said planing surface including a keel section centrally located on the bottom planing surface, an electric motor with a propeller attached to the bottom planing surface behind the keel section and having a battery source connected thereto and positioned within the elongated body member at the keel section, and a cylindrical shroud means positioned around the propeller and spaced from the keel to provide an inflow passage therebetween and around the motor to the propeller to create with the propeller a venturi effect on water flowing past the propeller, said keel section having a uniform depth dimension intermediate its front and rear extremities and the shroud means being positioned around the propeller to project to a dimension substantially equal to the maximum uniform depth dimension of the keel section, said keel section having a recess therein at the rear extremity of the same into which one end of the motor housing is positioned.

2. The motorized surfboard of claim 1 in which the top portion of the body member includes a battery mounting frame which projects into the keel section and in which the top portion has an aperture therein over the battery mounting frame for access thereto.

3. A motorized surfboard comprising an elongated body member having a longitudinally extending planing surface and a substantially flat top surface with tapered front and rear extremities, said planing surface including a keel section centrally located on the bottom planing surface, an electric motor with a propeller attached to the bottom planing surface behind the keel section and having a battery source connected thereto and positioned within the elongated body member at the keel section, and a cylindrical shroud means positioned around the propeller and spaced from the keel to provide an inflow passage therebetween and around the motor to the propeller, said body portion being formed of two molded portions with the top portion being of a uniform depth dimension throughout the extent of the member, said upper molded portion including an access opening for the battery with the access opening having positioned therein a cover plate and pressure switch means attached thereto controlling the operation of the motor.

4. The motorized surfboard of claim 1 and including a control means positioned outside of the body member with circuit means connecting the control means to the battery source and the motor for controlling the energization of the same.

5. The motorized surfboard of claim 4 and including a positive flotation material positioned within the elongated body member, filling substantially all of the interior outside of the battery mounting frame.

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,536,025

October 27, 1970

Bernard C. Tierney

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below:

Column 4, cancel lines 27 to 57, and insert the following:

2. The motorized surfboard of claim 1 in which the top portion of the body member includes a battery mounting frame which projects into the keel section and in which the top portion has an aperture therein over the battery mounting frame for access thereto.

3. A motorized surfboard comprising an elongated body member having a longitudinally extending planing surface and a substantially flat top surface with tapered front and rear extremities, said planing surface including a keel section centrally located on the bottom planing surface, an electric motor with a propeller attached to the bottom planing surface behind the keel section and having a battery source connected thereto and positioned within the elongated body member at the keel section, and a cylindrical shroud means positioned around the propeller and spaced from the keel to provide an inflow passage therebetween and around the motor to the propeller, said body portion being formed of two molded portions with the top portion being of a uniform dept dimension throughout the extent of the member, said upper molded portion including an access opening for the battery with the access opening having positioned therein a cover plate and pressure switch means attached thereto controlling the operation of the motor.

4. The motorized surfboard of claim 1 and including a control means positioned outside of the body member with circuit means connecting the control means to the battery source and the motor for controlling the energization of the same.

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5. The motorized surfboard of claim 4 and including a positive flotation material positioned within the elongated body member, filling substantially all of the interior outside of the battery mounting frame.

Signed and sealed this 20th day of April 1971.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents