July 24, 1962 R. F. SMITH 3,045,264

WATER SLEDS

Filed Sept. 26, 1960

FIG. 1

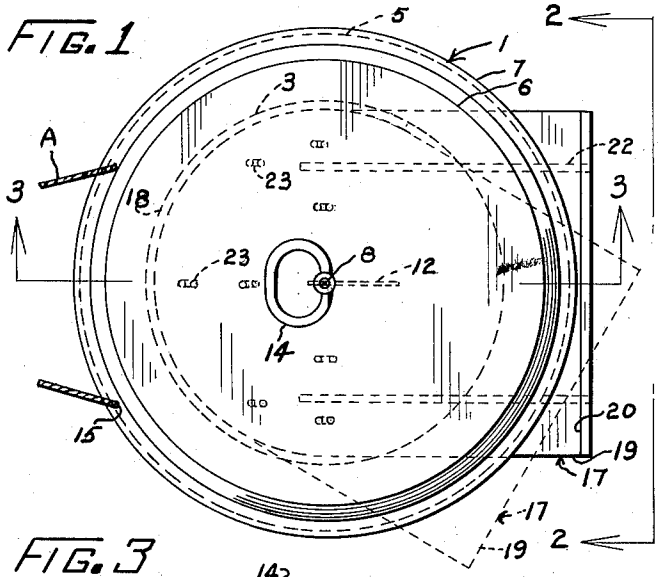


FIG. 2

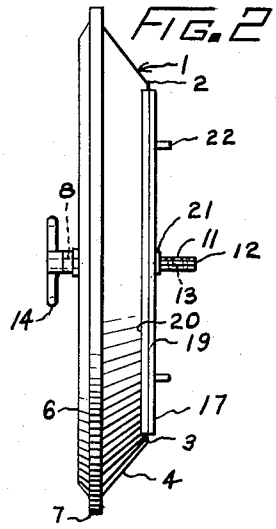


FIG. 3

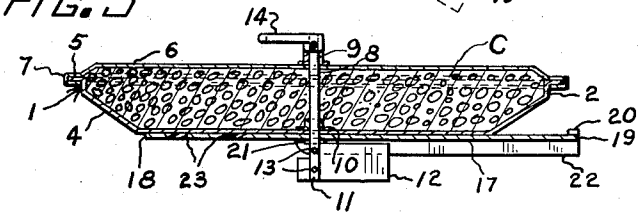


FIG. 4

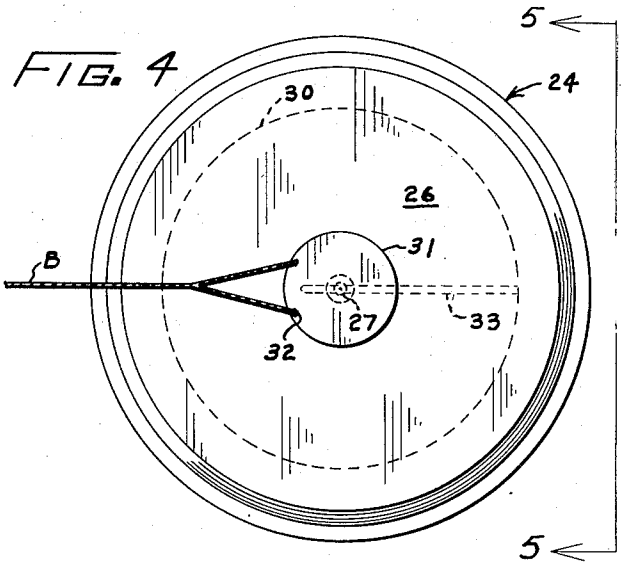
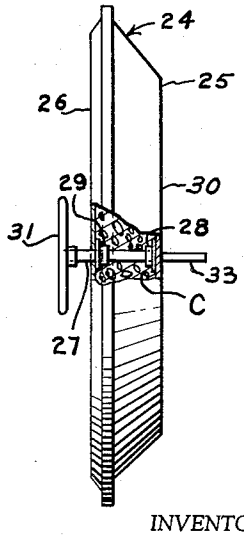


FIG. 5



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WATER SLEDS

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This invention relates to water sleds for towed travel on the surface of water while carrying a rider, and particularly to such sleds as are equipped with steering controls to afford a rider a measure of control over the direction of towed travel.

An object of the invention is to provide a buoyant body with a flat, water-planing bottom surface and with a steering control mechanism.

A further object is to form said water-planing surface on a platform disposed beneath and supporting said buoyant body in said towed travel.

Still another object is to provide pivot means, mounting said platform to said body and beneath said bottom surface for rotative swinging about the axis of said pivot means, with the upper face of said platform in contact with said bottom surface of the body.

Still another object is to provide said platform with steering vanes, such vanes responding to water-resistance induced by said travel to effect said rotative swinging.

Another object is to form said platform with passages to admit a flow of water between said platform and said bottom surface to reduce frictional resistance to the rotative swinging of said platform.

Another object is to enclose said buoyant body within a hollow shell conforming to the contours of said body.

These and various other objects are attained by the construction hereinafter described and illustrated in the accompanying drawings, wherein:

FIG. 1 is a top plan view of my invention, showing an alternative position of said platform in dash line.

FIG. 2 is an elevational view thereof on the line 2—2 of FIG. 1.

FIG. 3 is a sectional view on the line 3—3 of FIG. 1.

FIG. 4 is a top plan view of a modification of my invention.

FIG. 5 is a view in partial section on the line 5—5 of FIG. 4.

In these views, the reference character 1 designates a hollow body, the lower portion of which is formed of a shell 2 dished to form a flat, circular bottom wall 3, and an annular sidewall 4, upwardly extending and outwardly inclined from the periphery of the bottom wall; said sidewall upwardly terminates in an annular, outwardly projecting flange 5.

A circular deck 6 is slightly upwardly dished to form a peripheral flange 7. Such flange rests upon the flange 4, and is downwardly return bent to embrace the flange 4 in fluid-sealed engagement. Though shown as circular, said body can, of course, be elongated in form.

A shaft 8 extends centrally through the body 1, and is rotatable in fluid-sealed bearings 9 and 10 respectively secured to the deck 6 and bottom wall 3 in any conventional manner, as by screws or bolts (not shown). A lower portion 11 of the shaft projects through and beneath the bottom wall 3, and carries a rudder or steering vane 12. Any ordinary means may be used to secure said rudder to the shaft, although as illustrated, said lower portion of the shaft is slotted to receive the rudder, and screws 13 removably retain the rudder in position on the shaft.

Surmounting the shaft is a steering wheel 14 secured thereon as by a set-screw (not shown). A rider seated, kneeling, or crouched on the seld rearwardly of the wheel 14 may straddle and readily manipulate the latter.

In the flanges 4 and 7, are formed holes 15 to receive a towing rope A, though of course, hooks, eyelets, brackets and the like may also be used for this purpose.

The construction in the form as described above is operative, and suitable for a skillful, experienced, or more durable rider. However, it has been found that when the sled in this form is directed to the right or left of the path of travel of a towing boat, the tow rope tends to maintain the leading edge of the hollow body facing the towing boat. Thus, the sled skips and bounces over the waves, and over the wake of the boat, in a sideways direction, giving a rougher ride than when the sled merely follows directly behind the towing boat. There is, also, a tendency of the sled to tip in the direction of the towing boat.

A considerable improvement in smoothness of the ride, and in stability of the sled is attained by use of a water-planing platform 17, having a leading end 18 and a trailing end 19. The latter end may carry a reinforcing strip 20 to give rigidity to the platform. The platform is retained in place by the shaft 8, and has the major portion of its horizontal area disposed rearwardly of such shaft. The platform is pivotally swingable about said shaft independently of the rotative actuation of the shaft.

As best seen in FIG. 3, the upper face of the platform is in slidable contact with the lower face of the bottom wall 3 to afford the maximum area of support for the hollow body during travel of the sled. A collar 21 is interposed between the rudder 12 and the platform to maintain such contact of said faces.

One or more elongated vanes 22 are rigidly carried by and beneath the platform. Such vanes respond to water-resistance induced by deviations of the sled from a rectilinear path of travel, to control the rotative position of the platform relative to the shell. This response of the vanes keeps the leading edge 18 of the platform always headed in the direction of travel, regardless that the forward edge of the hollow body may be facing the towing boat.

The larger area of planing surface afforded by the platform, plus the fact that it swings rotatively about the shaft as above described, offers a smoother ride when the sled is diverted from a rectilinear path, and, further, said rotative swinging positions the platform to resist tipping of the sled responsive to said diversions in travel direction. These results are noted from actual testing of the construction.

To facilitate the rotative swinging of the platform 17, it has been found effective to form a plurality of passages 23 in the platform through which a travel induced flow of water is admitted between the contacting faces of said platform and the flat bottom wall 3 of the hollow body; such flow, of course, reduces frictional resistance between such faces.

FIGS. 4 and 5 depict a modification of the above described invention. Such modification employs the same type of hollow body, formed in the same manner from a dished shell 25 and a deck 26. The shaft 27 does not project downwardly through the bottom wall, but has its lower end rotatable in a bearing 28 and its upper end rotatably supported in bearing 29 fixed on the deck 26. The shaft is surmounted by a seat 31, formed with holes 32 to receive tow rope B.

Fixed to and beneath the flat bottom-wall 30 and substantially radial to the latter, is an elongated rudder or vane 33 to control the direction of travel.

A rider seated on the seat with his feet on the deck, can change direction of travel by rotating the hollow body, relative to the seat, with his feet. To afford such means of steering control in this modification, it is neces-

sary that the tow rope be secured to the seat. If it were fastened to the hollow body, a rider could not guide it as aforesaid, because he could effect only a rotation of the seat.

As the center of gravity of a rider occupying the seat **31** is somewhat higher in use of the modification than in use of the first described construction, greater skill is required in using the modification.

In reference to the basic invention shown in FIGURES 1, 2, and 3, it may be observed that experience has shown that such construction, absent the planing platform, can be sculled over the surfaces by continuous reciprocal rotative actuation of the rudder. When disconnected from any tow rope, it can also serve as an aquatic merry-go-round for children, being made to rotate on the water by continuous rotation of the rudder in one direction.

To ensure absolutely the buoyancy of the sled, the body portion thereof may be formed of cork, foamed plastic, or the like, and such body C may then be encased by the shell **2** and the deck **6**, the latter elements serving as a skin for the body. So constructed, there is no need for a fluid-sealed conjunction between said shell and deck members, as little, if any water may enter the device because the interior of the device is filled by the formed body.

Further results derived from the described construction are that it has greater stability than water skis, surf boards and the like, enabling children to handle it with ease. It floats when not being towed, and planes the water at comparatively slow speeds, thus affording greater safety, and allowing use of less powerful motors than other water-skimming devices.

What I claim is:

1. A water sled, including a body having a flat bottom wall and a deck upwardly spaced from said bottom wall, a tow connection means associated with said body to afford towed travel of the sled, a water-planing platform predeterminedly proportioned to support the body during such travel, said platform being so disposed beneath the body as to provide such support, pivot means mounting said platform on and beneath the bottom wall, and one or more vanes carried by said platform and responsive to fluid resistance induced by any deviation of the sled from a rectilinear path of travel to swing said platform about the axis of said pivot means and thus dispose the platform to afford maximum resistance to tipping of the sled responsive to said deviations.

2. In a water sled as set forth in claim 1, said platform occupying a plane parallel to the plane of said flat bottom wall, the upper surface of the platform being in rotatably slidable contact with the lower surface of the bottom wall to afford maximum support to said body, and a plurality of passages being formed to extend through the platform and admit a travel-induced flow of water between said contacting surfaces to reduce frictional resistance to said rotatable sliding.

3. A water sled, including a substantially circular fluid-sealed body having a flat bottom wall and an annular sidewall upwardly extending from the periphery of said bottom wall and a substantially circular deck surmounting the sidewall, a tow connection associated with said body to afford towed travel of the sled, a water-planing platform predeterminedly proportioned to support the body during such travel and so disposed beneath said body as to provide such support, pivot means mounting said platform on said bottom wall, one or more vanes fixed to the bottom surface of said platform and responsive to water resistance induced by deviations from a rectilinear path of travel to swing said platform about the axis of said pivot means, whereby the platform is positioned relative to the body to resist tipping of said sled responsive to said deviations, a rudder disposed beneath said body, a shaft positioned substantially upright in use to rigidly mount said rudder on its lower end portion, means carried by said body to rotatably mount said shaft, and a steering control element mounted on said shaft to afford rotative actuation of said shaft to effect or resist said deviations.

4. In a water sled as set forth in claim 3, said platform occupying a plane parallel to the plane of said flat bottom wall, the upper surface of said platform being in rotatably sliding contact with the lower surface of the bottom wall, to afford maximum support to said body, and a plurality of apertures being formed in the platform to admit travel-induced flow of water between said contacting surfaces to reduce frictional resistance to such sliding.

5. A water sled as set forth in claim 3, said pivot means and said shaft occupying a common axis, and said platform being swingable about such axis independently of said shaft.

6. A water sled as set forth in claim 5, said shaft being mounted within said body, transversely to the plane of the flat bottom wall and extending upwardly through the deck to carry said steering control element, and extending downwardly through said wall to carry said rudder.

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