Nov. 25, 1969 R. L. BEYMER 3,479,674

WATER SHOE

Filed Sept. 7, 1967

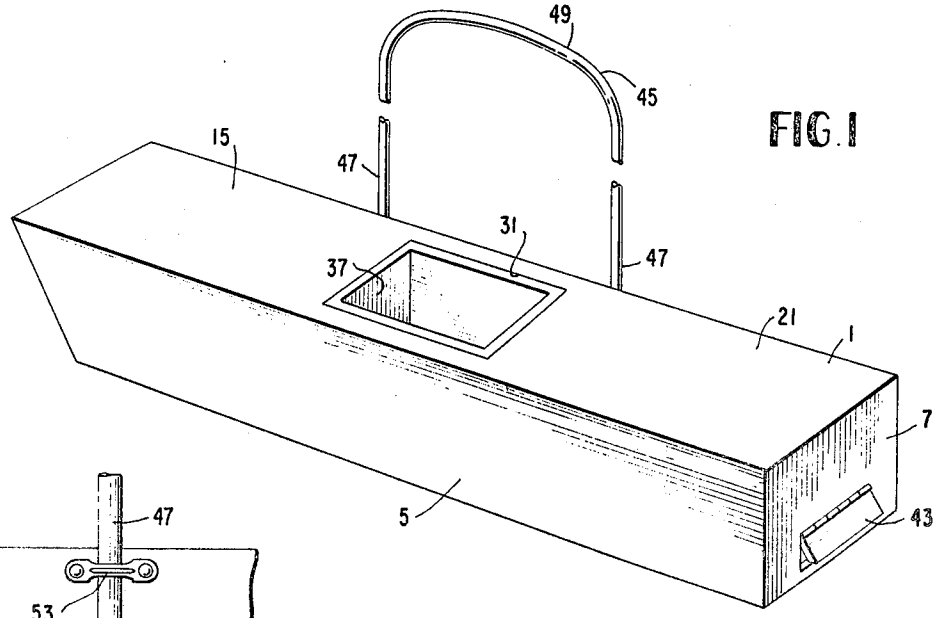


FIG. 1

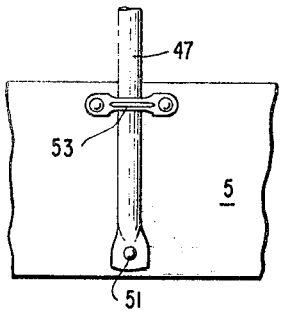


FIG. 4

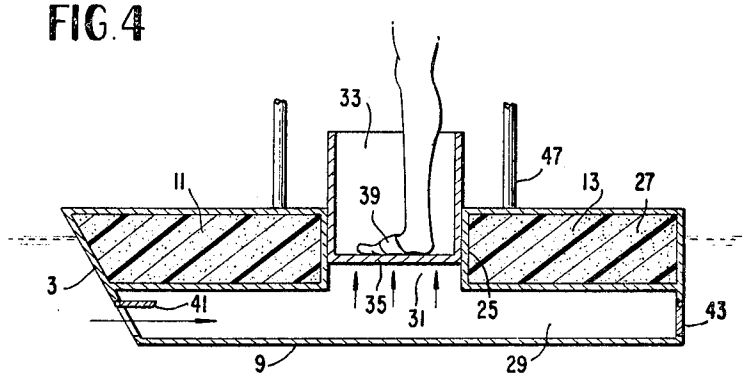
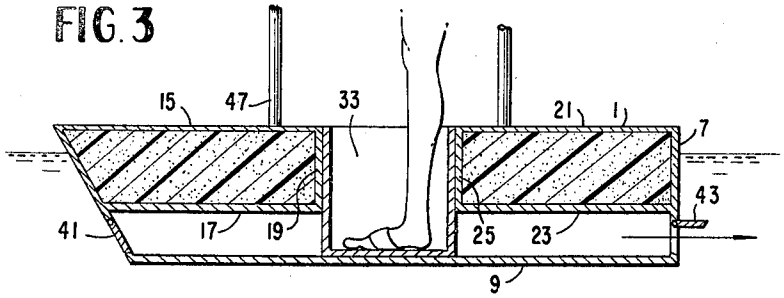


FIG. 2

FIG. 3



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WATER SHOE

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ABSTRACT OF THE DISCLOSURE

A water shoe comprises an elongated float having a chamber along its underside which is closed fore and aft by one-way valves. The foot of the wearer moves a portion of the wall of this chamber with a pumping action such that on the up stroke the fore valve opens and the aft valve closes to let water into the chamber, and on the down stroke the fore valve closes and the aft valve opens to expel water from the chamber with a jet action that propels the shoe forward. An inverted U-shaped handle on the outer side of each of a pair of shoes lets the wearer steady the shoes and control their position and direction.

The present invention relates to water shoes of the buoyant type in which a wearer may stand up on the surface of water and propel himself across the surface of water.

It is an object of the present invention to provide water shoes in which the action of walking propels the shoes through the water.

It is another object of the present invention to provide water shoes that can be readily steered by the wearer.

Still another object of the present invention is the provision of water shoes that are especially adapted to help the wearer remain upright on the water.

Finally, it is an object of the present invention to provide water shoes that will be relatively simple and inexpensive to manufacture, easy to carry and to operate, and rugged and durable in use.

Other objects and advantages of the present invention will become apparent from a consideration of the following description taken in connection with the accompanying drawing, in which:

FIGURE 1 is a perspective view of a right-hand water shoe according to the present invention, it being understood that the left-hand water shoe is the mirror image of that shown in FIG. 1;

FIGURE 2 is a side cross-sectional view of a water shoe according to the present invention, showing the position of the parts when the wearer's foot is raised;

FIGURE 3 is a view similar to FIG. 2 but showing the position of the parts when the wearer's foot is lowered and his weight rests on the shoe; and

FIGURE 4 is an enlarged fragmentary elevational view taken from the side opposite FIG. 1, showing the attachment of one leg of the handle to the shoe.

Referring now to the drawing in greater detail, there is shown a water shoe according to the present invention, comprising an elongated casing **1** providing buoyancy means of waterproof material such as glass fiber impregnated with thermosetting resin, or solid polyethylene or hard rubber or aluminum alloy or the like. Casing **1** should be light in weight but at least semi-rigid and can be made of any of the materials from which floats and pontoons and the like are commonly constructed.

Casing **1** has a downwardly rearwardly inclined front wall **3** and a pair of opposite parallel elongated side walls **5** which terminate rearwardly in an upright rear wall **7**. A bottom wall **9** is flat and horizontal and interconnects the walls **3**, **5** and **7** at their lower edges.

A pair of sealed compartments **11** and **13** extend most of the length of casing **1**. The fore compartment **11** is

bounded by a top wall **15** and a bottom wall **17**. Front wall **3** serves as the front wall of compartment **11**, and side walls **5** serve as the side walls of compartment **11**. Compartment **11** is bounded rearwardly by an upright rear wall **19**. Similarly, the aft compartment **13** is bounded by a top wall **21** and a bottom wall **23**. Rear wall **7** serves as the rear wall of aft compartment **13**, while side walls **5** serve as the side walls of compartment **13**. Compartment **13** is bounded at its front by an upright front wall **25** parallel to wall **19** and perpendicular to side walls **5**.

The fore and aft compartments **11** and **13** are watertight. They may be filled with hardened plastic foam **27** of conventional composition. Thus, even if either compartment should spring a leak, the compartment would not lose its buoyancy.

The bottom walls **17** and **23** and the side walls **5** and the bottom wall **9** and the lower portions of the front and rear walls **3** and **7** define between them a chamber **29** which preferably extends at least most of the length of casing **1**. Adjacent its midportion, this chamber **29** opens upwardly in a recess **31** which is bounded by the walls **5**, **19** and **25**.

An open-topped well or receptacle **33** is disposed in recess **31** for vertical sliding movement back and forth between the positions of FIGS. 2 and 3. Receptacle **33** can be of the same material as casing **1** and has a flat bottom **35** and upright side walls **37** disposed at right angles to bottom **35** and parallel to and slidably disposed against walls **5**, **19** and **25**. A foot strap **39** or other fastening for the foot is secured to bottom **35** of receptacle **33**, so that receptacle **33** moves up and down as the foot is raised and lowered. Receptacle **33**, and more particularly the bottom **35** thereof, thus partially bounds chamber **29** but provides a movable side wall portion of chamber **29** such that the volume of chamber **29** changes upon vertical movement of receptacle **33**. Means not shown may be provided for limiting upward movement of receptacle **33** relative to casing **1**.

One-way valves **41** and **43** are provided in front and rear walls **3** and **7** at the fore and aft ends of chamber **29**. One-way valve **41** opens only into chamber **29**. One-way valve **43** opens only out of chamber **29**. In the illustrated embodiment, the valves **41** and **43** are shown as flap valves mounted for vertical swinging movement about spaced parallel horizontal axes and tending to close under their own weight and under the influence of the surrounding water. Of course, the valves **41** and **43** can have the configuration of any other one-way valves and can be provided with means yieldably urging them closed, such as leaf springs or the like (not shown).

A handle **45** is provided on the outer side of each water shoe, that is, on the side of each shoe which is opposite the other shoe of the pair when the shoes have the same orientation side by side. Thus, the shoes of a pair of shoes are mirror images of each other by virtue of the different positions of the handles on the two shoes of the pair, and also possibly by a different arrangement of foot straps **39**. Therefore, the left shoe need not be specifically illustrated in the drawing, thereby to simplify the drawing.

Each handle is of inverted U-shaped configuration, and comprises a pair of upright legs **47** interconnected by a generally horizontally extending midportion **49** which is to be grasped by the wearer of the shoe. The legs **47** are secured to one side wall **5** of the shoe by the ends of the legs **47**, which are disposed fore and aft of recesses **31**.

FIG. 4 shows in detail the manner of attachment of one leg **47** of the handle **45** to a side wall **5** of the casing **1**, is being understood that the other leg **47** may be identically attached. As can be seen from FIG. 1, a rivet **51** or other fastener passes through the lower end of leg **47**

and through the material of side wall 5; while a bracing bracket 53 a substantial distance away from rivet 51 is itself riveted or otherwise secured to adjacent the upper edge of the side wall 5 and holds leg 47 tightly against side wall 5.

In operation, the wearer inserts his foot in receptacle 33 beneath the foot strap 39 and grasps midportion 49 of handle 45 and positions himself standing on the surface of the water. The total buoyancy of the sealed compartments 11 and 13 of each shoe is substantially greater than the weight of his body, so that the shoes do not sink. The shoes are placed and held in the desired position by manipulation of the handle 45. Any tendency of the shoes to roll or turn turtle is thus avoided.

To propel the shoes, it is not necessary that the wearer push forward with his feet, because it is well known in connection with water shoes that pushing forward with one foot only pushes the other shoe backward. Instead the wearer simply moves his feet up and down much the same as he would if walking. On the up stroke, shown in FIG. 2, chamber 29 enlarges. Water tries to flow into the chamber through both of valves 41 and 43. But valve 43 closes and will not open into chamber 29. Only valve 41 will open into chamber 29. Thus, water enters chamber 29 through valve 41, with valve 43 closed. This movement of the water into chamber 29 has some effect to draw the shoe forward.

When next the wearer presses down with the foot, moving the container 33 from the position of FIG. 2 to the position of FIG. 3 in which bottom 35 rests flat against bottom wall 9, the volume of chamber 29 is decreased and water is forced from chamber 29. But water cannot leave chamber 29 through one-way valve 41. Therefore, it leaves entirely through one-way valve 43, in the form of a rearwardly directed stream or jet whose reaction propels the shoe forward.

It will also be recognized that handle 45 is performing several additional functions. In the first place, the wearer can pull his foot up to the position of FIG. 2 because he can simultaneously press down on the handle 45 with his hand. He can assist in pressing down to the FIG. 3 position by pulling on the handle 45 with his hand. Thus, there is a natural interaction between the vertically movable receptacle 33 and the handle 45, through the body of the wearer. Not only is the entire body of the wearer brought into play in using the shoes, but also his legs do not become as tired as if they were doing all the work.

The handle 45 is also useful for steering. With the foot in the FIG. 2 position, that is with the body's weight off the shoe, the shoe can be readily turned by twisting the handle 45 in one horizontal direction or the other. First one shoe can be raised and turned and then the other shoe can be raised and turned.

It will also be recognized that the interaction of the wearer's body and the handles 45 prevents the wearer from falling sideways and relieves a great deal of strain from his ankles. It is no longer necessary, as in earlier water shoes, for the wearer to resist rolling of the shoes with the ankles. He now can do it with his whole body, through the handles 45. Moreover, the attitude of the shoes in the water, that is, the height of the forward end of the shoe relative to the rear end of the shoe, is also nicely controllable by the wearer, by manipulation of the handles 45. Of course, the buoyancy of the sealed compartments 11 prevents such changes in attitude of the shoes as would make the wearer fall either fore or aft.

From a consideration of the foregoing disclosure, therefore, it will be evident that all of the initially recited objects of the present invention have been achieved.

Although the present invention has been described and illustrated in connection with a preferred embodiment, it is to be understood that modifications and variations may be resorted to without departing from the spirit of the invention, as those skilled in this art will readily understand. In particular, it is possible to vary the structure corresponding to receptacle 33, so as to achieve a pumping effect in any of a variety of ways. For example, the side walls of receptacle 33 can be secured to the upper margins of recess 31 and be of a flexible collapsible waterproof material such as rubber or the like. Also, the portion of the wall of chamber 29 which is contacted by the foot of the wearer can simply be a flexible portion such as an insert of heavy sheet rubber. Recess 31 and receptacle 33 could also have other shapes, as seen in plan, such as cylindrical or oval or the like. Also, a seat for the wearer can be provided, interconnecting the shoes, or a flexible member can tie them together so that they do not separate too far in use. These and other modifications and variations are considered to be within the purview and scope of the present invention.

Having described my invention, I claim:

1. A water shoe comprising an elongated buoyancy means, means on said buoyancy means for receiving the foot of the wearer, handle means secured to the buoyancy means and extending up from the buoyancy means and having a portion adapted to be grasped in the hand of the wearer to permit maintaining a desired position of the shoe by manipulation of the handle means, means defining a chamber in the shoe, one-way valve means permitting water to flow into the chamber, one-way valve means adjacent the rear of the shoe permitting water to flow out of the chamber, pump means operable by the wearer to increase and decrease the size of the chamber thereby to pump water through the last-named valve means to propel the shoe forwardly, said means for receiving the foot of the wearer comprising a portion of said pump means so that the pressure of the foot of the wearer operates said pump means, said foot-receiving means being mounted on a wall portion of the chamber, means mounting said wall portion for movement into and out of the chamber, said mounting means comprising side walls upstanding from said wall portion and defining a well in which the foot of the wearer is disposed, and means mounting said side walls for vertical sliding movement relative to said chamber, said last-named means comprising vertical side walls of said buoyancy means that are disposed in vertical sliding relationship with said side walls that upstand from said wall portion of the chamber.

2. A water shoe as claimed in claim 1, said handle means comprising a bar in the form of an inverted U and secured to said buoyancy means at its ends fore and aft of said well, said bar being disposed in a vertical plane parallel to the direction of movement of the water shoe, said handle means being secured to an upright side of said buoyancy means at vertically spaced points one of which is at the lower end of an end of the bar and at the bottom of said buoyancy means and the other of which is intermediate the length of the bar and adajacent the upper side of said buoyancy means.

References Cited

UNITED STATES PATENTS

22,457	12/1858	Rowlands	9—310
1,344,225	6/1920	Halbow	9—310
1,693,867	12/1928	Reinwald	9—310

FOREIGN PATENTS

204,192	11/1908	Germany.
2,291,914	1/1915	Great Britain.

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