Aug. 25, 1964 J. D. YOAKUM 3,145,400

MARINE VEHICLE

Filed April 8, 1963 3 Sheets-Sheet 1

FIG. 1

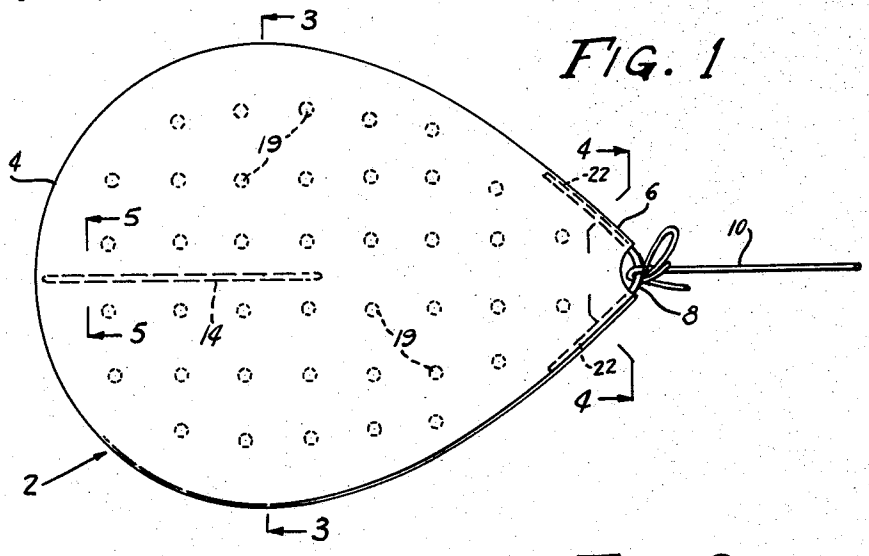


FIG. 2

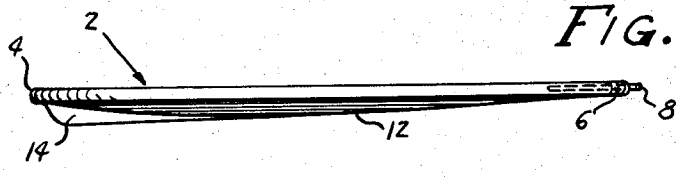
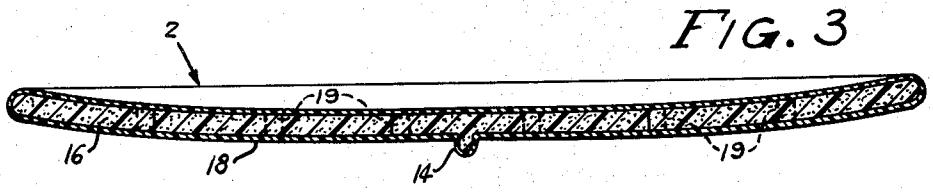


FIG. 3



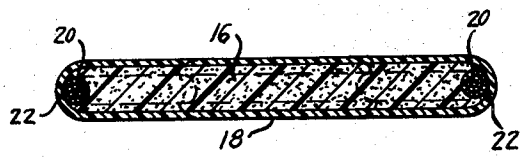


FIG. 4

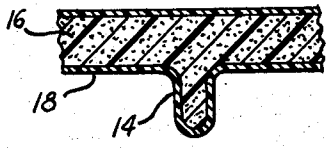


FIG. 5

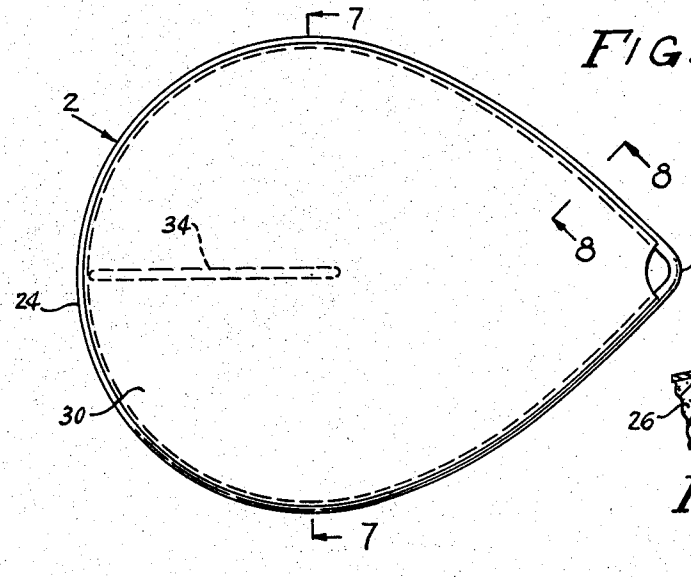
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Filed April 8, 1963 3 Sheets-Sheet 2

FIG. 6



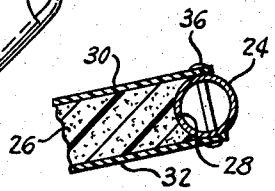
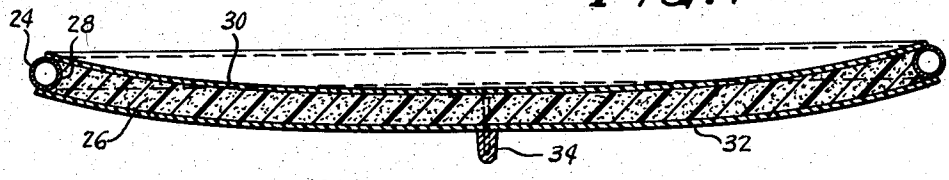


FIG. 8

FIG. 7



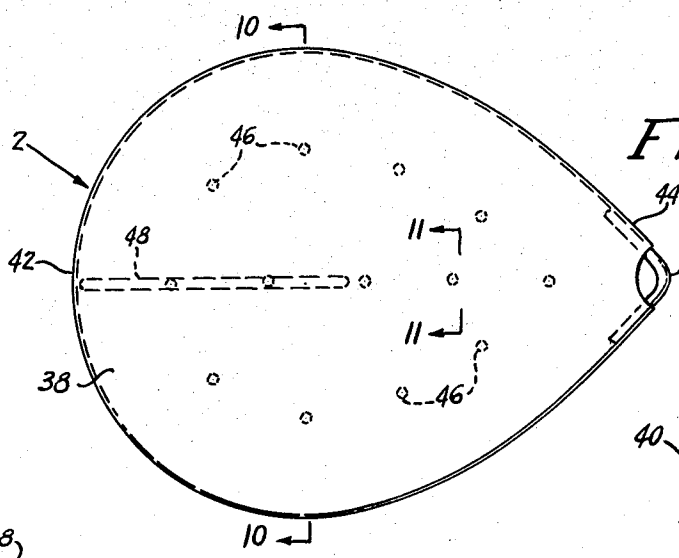


FIG. 9

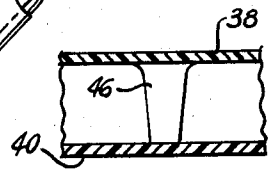


FIG. 11

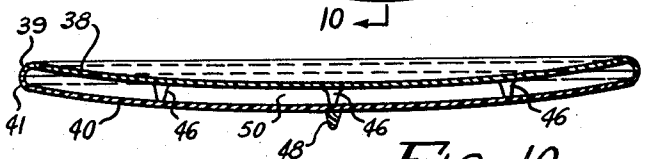


FIG. 10

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Aug. 25, 1964 J. D. YOAKUM 3,145,400

MARINE VEHICLE

Filed April 8, 1963 3 Sheets-Sheet 3

FIG. 12

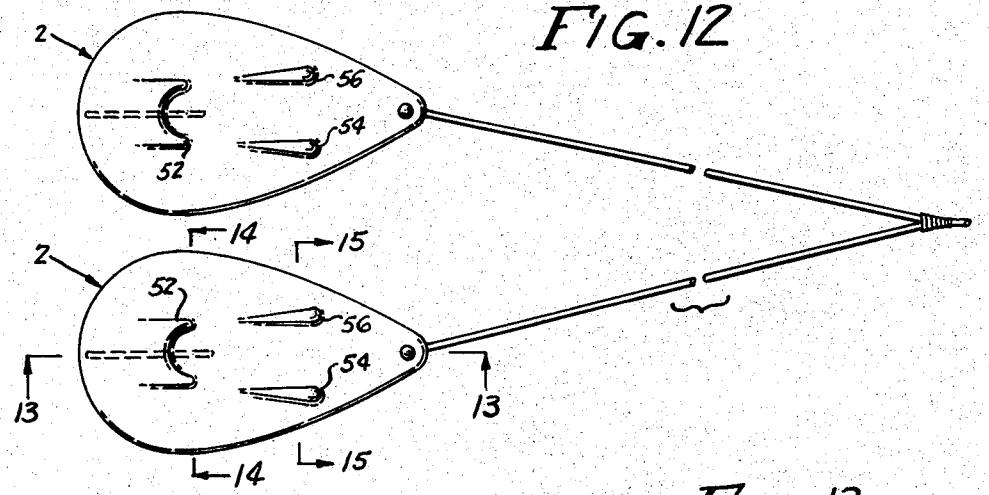
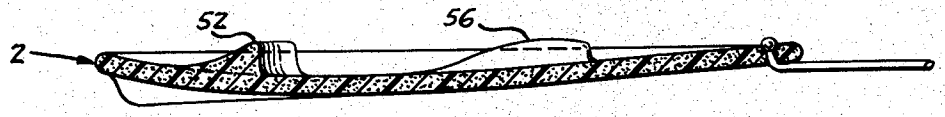


FIG. 13



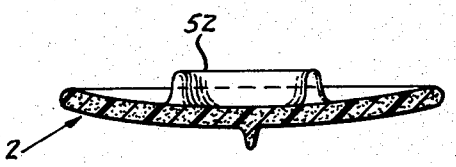


FIG. 14

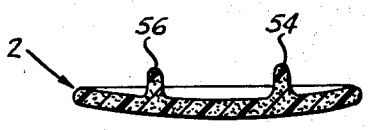


FIG. 15

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MARINE VEHICLE

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3 Claims. (Cl. 9—310)

This invention relates to a marine vehicle of the type generally referred to as aquaplanes or water skis and similar apparatus used in aquatic sports and designed to be ridden when drawn along on the surface of the water.

More specifically, the invention relates to a marine vehicle adapted to be towed on the surface of the water by a boat.

An object of the invention is a marine vehicle ridable and maneuverable when towed at moderate speeds and which can be ridden by a person with a modest amount of skill.

Another object of the invention is a marine vehicle capable of being ridden by a person in either a standing or sitting position.

A further object of the invention is a marine vehicle having a novel construction affording considerably more stability than those presently in use.

Another object of the invention is a marine vehicle having a simple and practical construction and which can be manufactured at modest cost.

Further objects and advantages of the present invention will become readily apparent by referring to the following detailed description when taken with the accompanying drawings in which:

FIGURE 1 is a plan view of one form in which the marine vehicle according to the present invention may be constructed.

FIGURE 2 is a side elevatoinal view of the marine vehicle illustrated in FIG. 1.

FIGURE 3 is an enlarged cross sectional view taken on lines 3—3 of FIG. 1.

FIGURE 4 is a sectional view taken on lines 4—4 of FIG. 1.

FIGURE 5 is an enlarged fragmentary cross-sectional view taken on line 5—5 of FIG. 1.

FIGURE 6 is a plan view illustrating a slightly modified form of construction of the instant invention.

FIGURE 7 is an enlarged sectional view taken on lines 7—7 of FIG. 6.

FIGURE 8 is an enlarged fragmentary sectional view taken on lines 8—8 of FIG. 6.

FIGURE 9 is a plan view of a further modification of the invention described herein.

FIGURE 10 is a cross-sectional view taken on lines 10—10 of FIG. 9.

FIGURE 11 is a fragmentary sectional view taken on lines 11—11 of FIG. 9.

FIGURE 12 illustrates another form of the invention wherein two marine vehicles of the type illustrated in FIG. 1 are used in a manner similar to water skis, the vehicles being reduced considerably in size.

FIGURE 13 is a cross-sectional view of one of the vehicle illustrated in FIG. 12 taken on lines 13—13 thereof.

FIGURE 14 is a sectional view of one of the vehicles illustrated in FIG. 12 taken on lines 14—14.

FIGURE 15 is a sectional view of one of the vehicles illustrated in FIG. 12 taken on lines 15—15.

Referring to the drawings in more detail, FIG. 1 illustrates the marine vehicle constructed in accordance with the teachings of the present invention and indicated generally by the number 2. As shown the marine vehicle is substantially tear-dropped in configuration having a rounded rear end portion 4 and a substantially pointed front end portion 6. At the front end 6 of the vehicle 2 there is provided means 8 later described to which a

tow line 10 is secured. The other end of the tow line is fixed to the rear portion of a boat whereby the vehicle 2 may be drawn along the surface of the water carrying a rider and providing aquatic sport.

Shown in FIG. 2 is a side elevation of the vehicle 2 and illustrating the general configuration of the portion forming the underside 12 of the vehicle 2 as curved and has a fin 14 projecting downwardly therefrom. The fin 14 extends along the longitudinal center line of the vehicle 2, from the rearward end thereof to a point substantially midway between the rearward end and the forward end of the vehicle.

The vehicle in its preferred embodiment is constructed from a horizontally disposed main body portion of an expanded cellular polyurethene plastic having a coating applied thereto. As shown in FIG. 3, the expanded polyurethene foam 16 has been molded to assume a generally saucer-shaped cross-sectional configuration. The fin 14 as shown is formed integrally with the cellular polyurethene core 16. Subsequent to the molding of the core 16 a coating 18 of a synthetic resinous material is applied to all the surfaces thereof. For additional strength strands of "Fiberglas" may be incorporated in the coating, and studs 19 may be equally spaced throughout. The body portion of the vehicle 2 is of uniform thickness and has a concave upper surface and a convex lower surface, the body portion being symmetrical on each side of a fore and aft extending longitudinally center line.

To provide a connection for a tow line to the vehicle 2, a groove 20 is provided in the sides of the core 16 adjacent the pointed front end portion 6. Anchored in the groove 20 is a length of nylon rope 22. The body portion of the vehicle 2 is provided with a cut-out portion adjacent the forward end and a part of the rope 22 bridges this cut-out portion to form a loop for attachment thereto of a tow line 10. Although it is specified that the means 8 for connecting the tow lines of the vehicle is in the form of a nylon rope 22, it is obvious that other suitable strand means such as rigid or semi-rigid plastic rods may be substituted therefor. After the rope 22 has been disposed within the groove 20 the entire vehicle 22 then has applied to the surface thereof the synthetic resin coating 18 whereby the rope 22 is sealed therein and is securely fastened.

In the modified form of the invention shown in FIG. 6, the vehicle 2 is constructed from a plurality of components which when assembled still provide the desired tear drop configuration.

A tear drop shaped frame is first formed by a tubular member 24. A sheet of expanded polyurethane foam 26 is molded to the configuration of a saucer and is disposed within the frame 24. The expanded polyurethane sheet is provided with a peripheral groove 28 in which the tubular frame member 24 resides. A deck plate 30 is placed in overlying relation to the expanded polyurethane core 26 and tubular frame member 24. The deck plate 30 is so formed that when in overlying relation to the expanded core 26 and frame 24, it is in intimate contact therewith over substantially all its area. A hull plate 32 is disposed in underlying relation to the expanded core 26 and frame member 24 and is formed in the same manner as the deck plate 30. As shown in FIG. 7, the hull plate 32 is also in intimate contact with the expanded core 26 and frame member 24 over substantially all its area. A separately formed fin 34 is secured to the underside of the vehicle 2 by means of bolts passing through the vehicle and into the fin 34.

The frame 24 and the deck and hull plates 30 and 32 may be formed of plastic or other corrosion resistant materials such as aluminum. If the tubular frame member 24 and the deck and hull plates 30 and 32 are formed

of a plastic material, they are suitably joined together by means of a resinous adhesive material. If the parts are constructed from aluminum, the hull and deck plates **30** and **32** may be secured to the tubular frame member **24** by means of welding or bolts **36** as shown in FIG. 8.

In the form of the invention shown in FIG. 9, the marine vehicle **2** is also in the configuration of a tear drop as are the vehicles shown and described in FIGS. 1 and 6. In this modification, however, the vehicle **2** is constructed from a pair of sections **38** and **40**. The sections may be formed from a rigid plastic material such as polystyrene or preferably it can be formed from a semi-rigid polyethylene. As indicated, the configuration of the vehicle shown in FIG. 9 is generally the same as those previously described having a rounded rear end portion **42** and a substantially pointed front end portion **44**.

The section **38** which forms the deck surface of the vehicle **2** has formed thereon an integral flange which depends downwardly from the edges thereof. Also formed integral with the under surface of the section **38** are a plurality of downwardly extending projections **46**. The hull section **40** is molded having an integral flange portion extending upwardly from the edges thereof and when in assembled relation with respect to the deck section **38** the flanges cooperatively engage each other. A stabilizing fin **48** is molded integral with the hull section **40** and is provided for the same purpose, that of stability, as the fins in the previously described forms of the invention.

When assembling the deck and hull sections **38** and **40** of the marine vehicle illustrated in FIG. 9, the downwardly depending flange **39** of deck section **38** and the upwardly extending flange **41** from hull section **40** cooperatively engage each other and are secured together by means of a suitable adhesive or welding. The integal projections **46** on deck section **38** maintain the sections **38** and **40** in spaced relation. The projections **46** are secured to the hull section **40** by means of a suitable adhesive or welding. Constructed in this manner the marine vehicle is provided with an air space **50** which enhances the buoyant characteristics of the device. The air space **50** may be likened to the expanded cellular polyurethane foam material used in the forms of the invention shown in FIGS. 1 and 6 and serves the same purpose.

As illustrated, both forms of the marine vehicle as shown in FIGS. 1, 6, and 9 are provided wtih suitable means **8** to which a tow line may be secured for drawing the same across the surface of the water.

In some instances a more skilled rider may desire a marine vehicle offering more of a challange than a vehicle such as that illustrated in FIGS. 1 to 10. If such is the case, the invention may be provided in the forms shown in FIGS. 12–15.

In this form of the invention the aquatic vehicles illustrated in FIGS. 1–10 are reduced substantially in size whereby a more skilled rider may place one foot on each and the same are then towed by a boat over the surface of the water. The construction of the vehicles **2** may be the same as any of the constructions shown in FIGS. 1–10.

As illustrated, the general configuration of the invention as shown in FIGS. 12–15 is saucer-shaped as are those previously described. In this arrangement the foot of the operator is placed on each of the two vehicles. It is apparent that some means are necessary to prevent the feet of the rider from sliding or becoming displaced from the surface of the same. In order to retain the feet of the rider on the deck surface of the vehicles **2**, a heel chock **52** is formed integrally with the upper section whereby displacement of the foot in a rearward direction is avoided. To prevent sideways displacement of the rider's foot a pair of spaced projecting members **54** and **56** are integrally formed and longitudinally spaced from the heel chock **52**. In this manner the foot of a person using the device as shown in FIGS. 12–15 is prevented from moving laterally or longitudinally.

While having described the invention in its preferred embodiments, modifications and variations thereof will become apparent to those skilled in the art. However, such variations and modifications are considered to be within the spirt and scope of the appended claims.

I claim:

1. A vehicle for towing on the surface of a body of water comprising a horizontally disposed tear-drop shaped body portion having a forward end and a rearward end, said body portion being of uniform thickness and having a concave upper surface and a convex lower surface, said body portion being symmetrical on each side of a longitudinally extending center line, and a fin depending from the lower surface of said body portion and extending from a point contiguous to the rearward end to a point substantially midway between the rearward end of said body portion and the forward end, said body portion being provided with a cut-out portion adjacent the forward end, a means embedded in the portions of the perimeter of said body portion on each side of said cut-out portion and having a part bridging said cut-out portion so as to provide with the edges of said cut-out portion a loop for attachment thereto of a towing line.

2. The structure of claim 1 wherein said body portion comprises an expanded cellular polyurethane plastic and includes an outer coating of an artificial resinous material.

3. The structure of claim 1 further including vertical projections on said upper surface spaced to accommodate the foot of a user.

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