United States Patent [19]

Noyli

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[54] **BOAT FOR USE AS A LIFEBOAT AND FOR OTHER PURPOSES**

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[30] **Foreign Application Priority Data**

July 7, 1970 Israel 34863

[52] **U.S. Cl.** **9/3,** 9/2

[51] **Int. Cl.** **B63c 9/02**

[58] **Field of Search** 9/3, 5, 11

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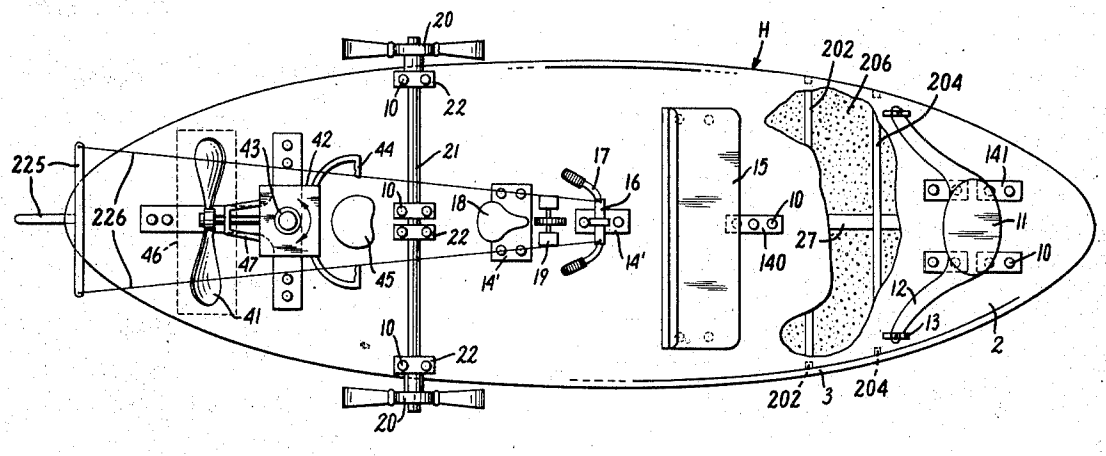
Assistant Examiner—H. S. Lane
Attorney—Elmer R. Helferich et al.

[57] **ABSTRACT**

A boat having a double-ended hull of relatively shallow draft which is filled with a material impenetrable to water and having a specific gravity of less than 1.0. The boat hull has a substantially elliptical plan outline and a substantially flat flush deck, the buoyancy of the hull being such that the hull has very little freeboard so that the deck is substantially at water level. Means are embodied in the boat which allow for removably attaching various devices such as propulsion units, deck chairs and the like to the boat deck.

15 Claims, 12 Drawing Figures



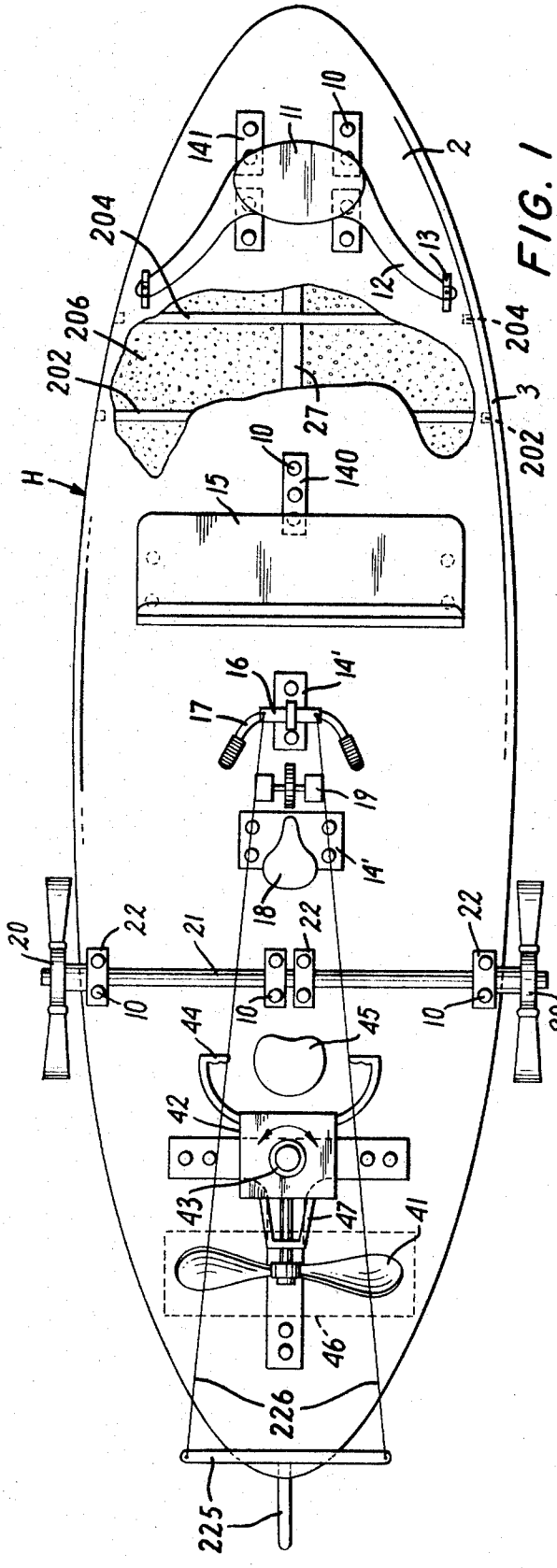


FIG. 1

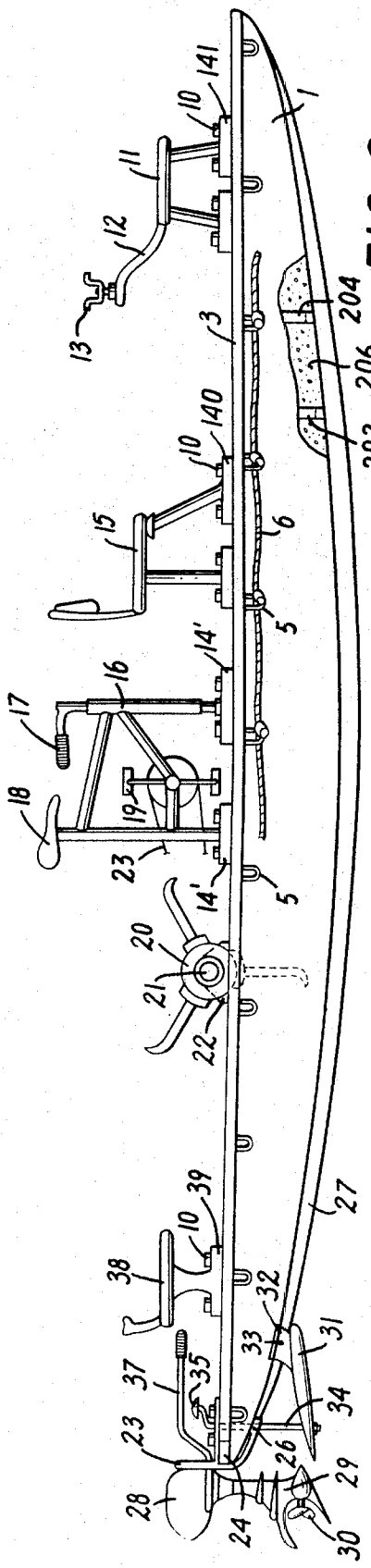


FIG. 2

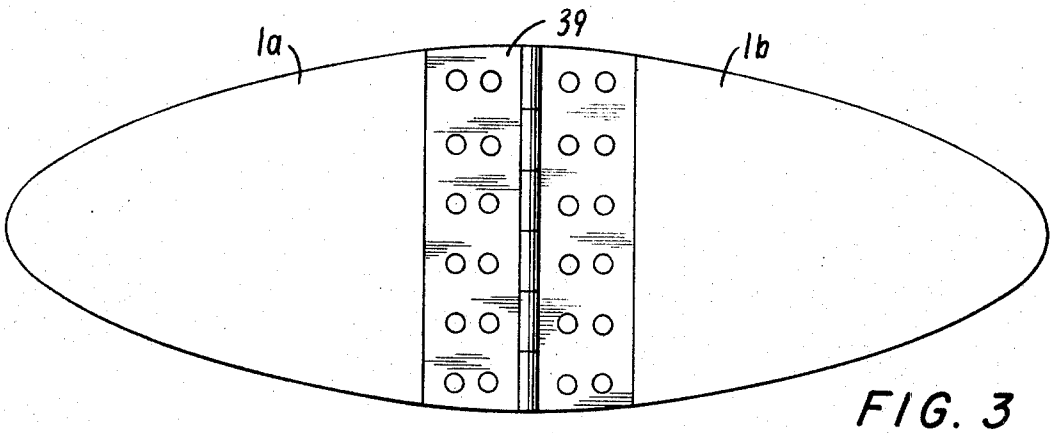


FIG. 3

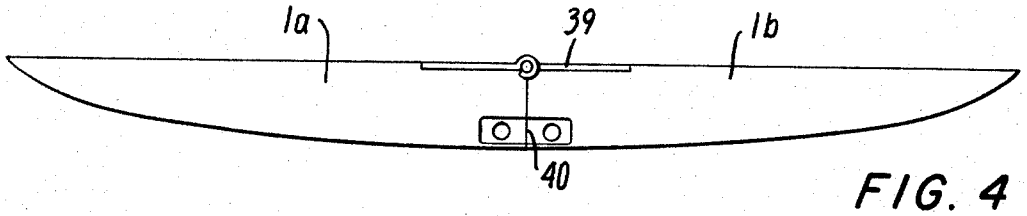


FIG. 4

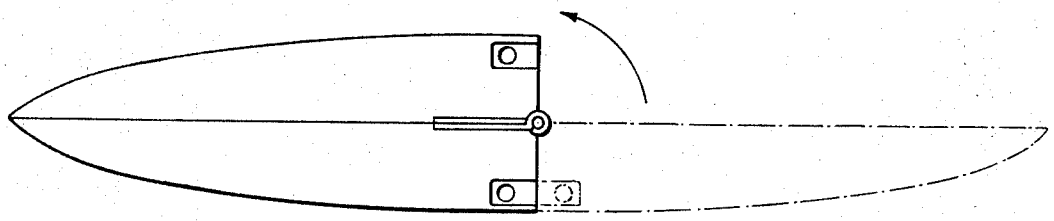


FIG. 5

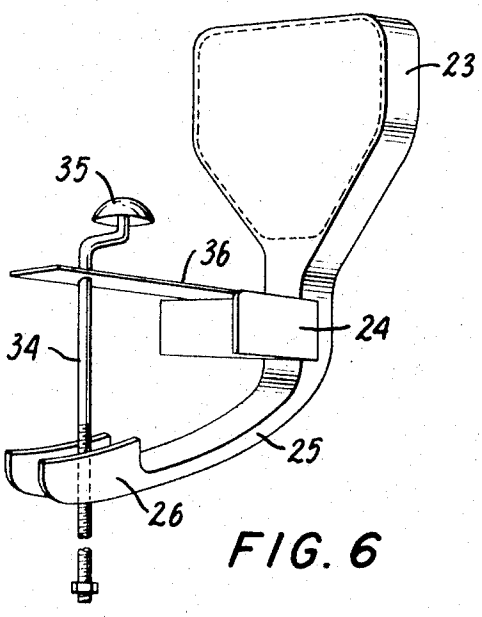


FIG. 6

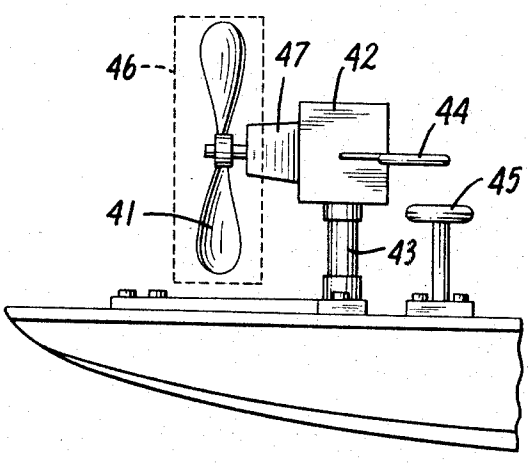


FIG. 7

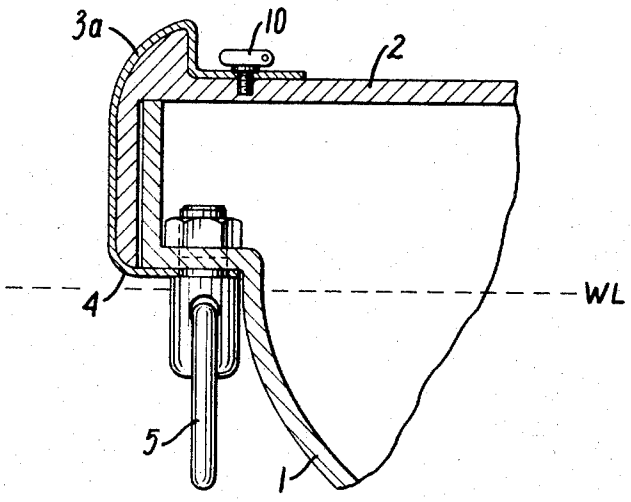


FIG. 9

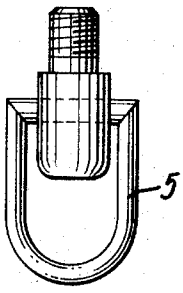


FIG. 8

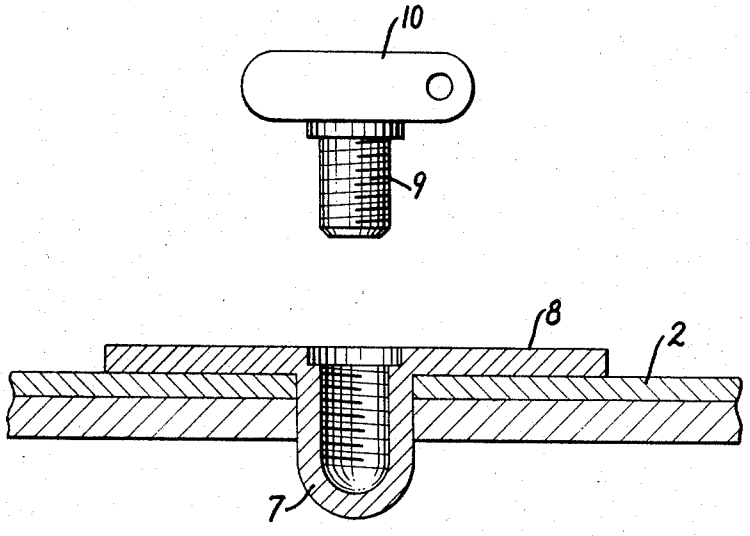


FIG. 10

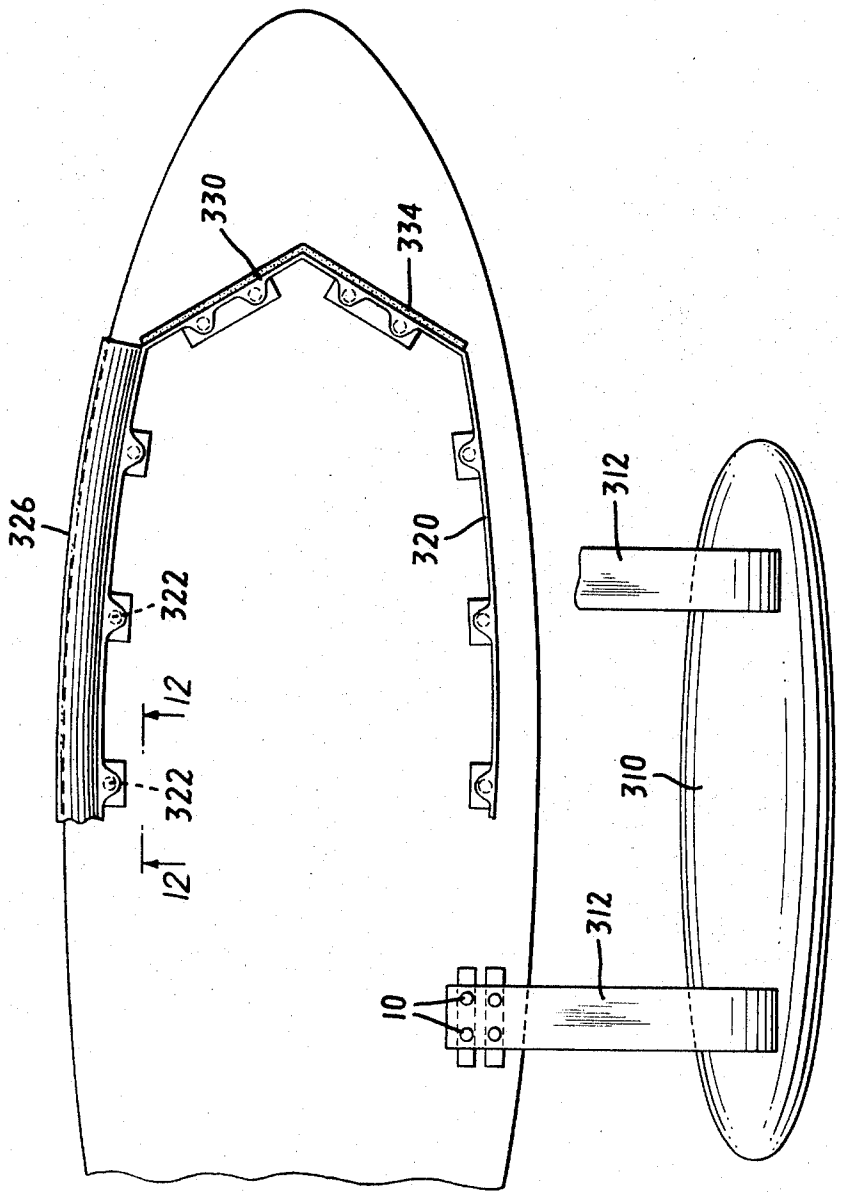


FIG. 11

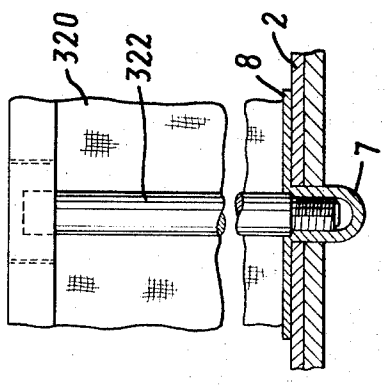


FIG. 12

BOAT FOR USE AS A LIFEBOAT AND FOR OTHER PURPOSES

BACKGROUND OF THE INVENTION

Small boats, particularly those intended for employment in lifesaving operations in open seas or in heavy surf as well as in confined and crowded waters, should advantageously possess characteristics of seaworthiness, high maneuverability and unsinkability. Moreover, when used for lifesaving purposes the boat should be lightweight so that it can be easily and quickly launched from shore by one or two persons at most. Once afloat the boat should be amenable to immediate and speedy propulsion thereof from any one of a number of propulsive means suitable for such purpose. Once in the vicinity of a swimmer in distress, the user of the boat should be able to quickly initiate and effect rescue operations from a stable platform provided on the boat. Such advantageous characteristics in a boat have not been provided in known forms of boat construction since, while in some instances known boat types may possess certain of the aforementioned requirements, others are lacking. For example, lifeboats of the conventional type, including whaleboat types, are not as readily maneuverable in confined areas as is desirable. Furthermore, known types of lifeboats do not provide or embody a flat main deck located close to the water level and upon which a rescuer can stand during the time of effecting rescue so that such convenience can be used to advantage in making the rescue. Additionally, known types of boats do not provide unobstructed vision to those standing in the boat when they are close to the person in distress in the water, since the relatively high sides of the boat partly block viewing of the water area immediately around the boat.

SUMMARY OF THE INVENTION

The present invention is concerned generally with an improved form of small boat especially suited for lifesaving service. However, its design is such that it can be simply and quickly converted for recreational uses, for example, use for surfing, water skiing, fishing, sailing and the like.

In accordance with the present invention, the boat is comprised of an elongated relatively shallow hull including a suitable framework covered with a skin of lightweight material, the hull being characterized by being substantially elliptical in plan outline and semi-elliptical in transverse section. The hull which preferably is double-ended with symmetrically rounded bow and stern parts also includes a substantially flat flush deck extending from stem to stern and the full width of the hull, the deck having an overhanging part extending outboard of the hull with the buoyancy of the hull being such that the hull has very little freeboard so that the deck is substantially at water level. Preferably the hull is filled with a material which is substantially impenetrable to water and has a specific gravity of less than 1.0, thereby making the hull unsinkable.

An important feature of the invention is the provision of a plurality of plates having threaded tubular parts which are secured permanently to the deck at suitable locations and provide with cooperating threaded fasteners, means with which certain auxiliary devices can be removably secured to the hull and/or deck. Such auxiliary devices principally include means for propelling the boat, including chain driven paddle wheel drive, outboard motor, airscrew, or oars.

Other devices can be removably secured to the boat hull for convenience in use either as a lifesaving boat or as a recreational craft. Thus, for example, benches for passengers can be quickly and conveniently secured to the boat as can a breakwater encircling a substantial expanse of the deck to protect persons seated on the boat from the effects of spray, waves, etc.

Other features of construction which can be embodied in the boat include provisions of a lifeline secured around the hull, one or more stabilizing outriggers connectable with the hull, and an underwater stern plane for raising and lowering the boat hull as needed.

The invention accordingly comprises the boat possessing the features, properties and relationship of elements which will be exemplified in the construction hereinafter described and the scope of the invention will be indicated in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects of the invention will in part be obvious and will in part appear from the following detailed description taken in conjunction with the accompanying drawings wherein like reference numerals identify like parts throughout and in which:

FIG. 1 is a plan view of a boat constructed in accordance with the principles of the present invention, there being depicted various forms of auxiliary devices which can be embodied in the boat, e.g., propulsion means, a portion of the deck of the boat being broken away to depict the internal construction of the hull.

FIG. 2 is a side elevational view of the boat shown in FIG. 1, certain of the auxiliary devices shown in FIG. 1 not being depicted in FIG. 2.

FIGS. 3 and 4 are, respectively, a plan and a side elevational view of an alternate form of the boat in which the hull is made collapsible for convenience in handling and storing of the same.

FIG. 5 is a side elevational view of the boat shown in FIGS. 3 and 4 in collapsed condition.

FIG. 6 is a perspective view depicting an attachment for the boat hull employed for mounting an outboard motor on the hull.

FIG. 7 is a fragmentary side elevational view of one end of the boat depicting an alternate form of propulsion, i.e., an airscrew which can be employed with the boat.

FIG. 8 depicts a ring member which can be secured to the boat hull at the side thereon in the manner shown in FIG. 9 for attaching lifelines to the boat.

FIG. 9 is a fragmentary transverse sectional view of one side of the boat hull showing the manner of securing the ring members of the type depicted in FIG. 8 on the hull for attaching a lifeline at the side of the boat.

FIG. 10 is a fragmentary vertical sectional view showing threaded insert plates which can be secured to the deck of the boat and employed in conjunction with fastener components 10 for attaching various auxiliary devices such as propulsion means, chains, etc. to the boat.

FIG. 11 is a fragmentary plan view of a further form of boat in which one or more stabilizing outriggers can be connected to the boat deck, there being shown addi-

tionally a canvass curtain which can be removably erected on the deck of the hull to function as a breakwater.

FIG. 12 is a fragmentary elevational view taken along the line 12—12 of FiG. 11.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention is concerned with a boat particularly suited for use in lifesaving operations. Its hull construction is such that it embodies excellent characteristics of speed without employing conventional hull streamlining features therein, e.g., a sharp and high prow with a pronounced sheer. The boat has the attributes of excellent seaworthiness, high maneuverability, is unsinkable and by reason of its flush deck being substantially at water level is specially suited for the recovery of swimmers in distress in the water. Additionally the boat is readily adapted for other uses, such as for recreational purposes and can be fitted out for such purposes by removably connecting special auxiliary devices to the hull, the hull being provided with special attachment means to effectuate the foregoing.

Referring now to FIGS. 1 and 2, the boat includes a hull H, the hull having a shell 1 formed around a hull frame which for example, can include the usual keel 27 and interconnected transverse frames 202, 204, and on top of which is secured a substantially flat flush deck 2, the deck being provided with an overhanging part (FIG. 9) extending outboard of the hull and connected therewith such as to form an airtight structure thereby rendering the boat substantially unsinkable. The hull is designed to have little, if any, freeboard and a buoyancy such that the underface of the overhanging deck part normally is substantially at water level.

As can be best noted in FIG. 1, the hull is symmetrically shaped at its opposite ends and enlarges uniformly in width from the symmetrically rounded bow and stern parts to a maximum width amidships at the transverse centerline location. Furthermore, the hull is of relatively shallow depth with such depth being of a minimum at the bow and stern ends and increasing uniformly in the direction of the transverse centerline of the hull to a point of maximum depth at such location. In general, the plan outline of the hull is substantially elliptical and the transverse sectional shape is semi-elliptical. The hull H preferably is made from lightweight highly durable materials. Thus, the keel 27 and framing members 202, 204 can be made, for example, from aluminum or magnesium. The shell 1 along with the deck 2 also can be made from suitable lightweight materials including fiber reinforced synthetic resins, laminated synthetic resin, or thin gage metal sheets as for example aluminum sheet. Together the framing and the shell of the hull provide a watertight enclosure rendering the hull virtually unsinkable. In furtherance of the advantage of rendering the hull unsinkable, it can be filled with a material which is impenetrable to water and which has a specific gravity of less than 1.0, e.g., a foamed synthetic resin material having noncommunicating pores and which is nonreactive with seawater. Thus, even if the shell should be ruptured by accident or other inadvertent act, the hull will remain afloat. While the hull is described by way of example as being comprised of a framework of keel and interconnected members, it will be appreciated that the hull could be formed as a rigid structure by molding the shell as one component and securing the flush deck thereto in permanent watertight connection therewith.

As indicated the hull has rounded bow and stern ends which provide a number of advantages including unlimited visibility to a user standing on the deck who may be approaching a swimmer in distress as well as the convenience of not offering sharp obstruction to the person in the water thereby avoiding the likelihood of causing injury if the boat strikes or otherwise contacts the swimmer during rescue.

The feature of the hull being double-ended is highly advantageous in lifesaving operations. It enables a lifeguard standing on the deck 2 to approach a person in distress in the water with accuracy and rapidity because of optimum visibility. Moreover, the low flush deck 2 being substantially at water level greatly facilitates the rescuer's lifting or pulling a distressed swimmer onto the deck. Furthermore, it enables the lifeguard to always be in full control of the course of the boat and permits rapid change in course if such is required. Thus, for example, if a lifeguard is standing at one end of the boat and propelling it with a large double-ended paddle, if the boat should start to descend on a breaker which could cause upsetting of the boat, the lifeguard need only turn around thereby facing the breaker and he can employ the paddle to climb the breaker to maintain control of the boat movement until the breaker has passed. In effect, the lifeguard is thus capable of effecting a complete 180° change of course in the absolute minimum of time without having to turn the boat, rather, he merely changes his direction.

The deck 2 of the boat can be provided with an encircling rim part 3 which as shown in FIG. 9 can comprise an integral part of the deck and shell 1 or which may be made as a separate element securable to the deck 2 as shown in FIG. 9. In either case, the encircling rim has an upstanding ledge 3*a* which provides a handhold means for persons in the water and wishing to board the boat as well as a foot support for a lifeguard standing on the deck. Additionally, the deck 2 can, as mentioned earlier, be provided with an overhang 4 (FIG. 9), such overhanging part extending outboard of the hull and serving to receive a number of ring components 5 through which can be secured a lifeline 6. The lifeline, as will be noted in FIG. 2, encircles the hull at both sides and provides handhold means to serve a substantially large number of swimmers in the water.

An important feature of the present invention is the use of means embodied in the boat to permit ready and convenient mounting and demounting of various auxiliary devices on the boat. Such means are shown especially in FIG. 10 and include a plate 8 including a tubular bore part 7 which extends through a hole in the deck 2 and internally of the hull. The plate 8 is intended to be secured in permanent manner to the deck by any suitable connector means such as an adhesive, welding or the like. The tubular bore part 7 is threaded and serves to receive the companion screw thread part 9 of a plug 10, the latter thus serving to securely mount auxiliary devices to the deck and/or hull.

FIGS. 1 and 2 depict various ones of the auxiliary devices which can be used in conjunction with the boat. The use of such devices and the convenience for

mounting and demounting of the same gives the boat of the present invention the multi-purpose utility desirable in small boats used for lifesaving and recreational purposes. One such auxiliary device is comprised of a seat **11** fitted with feet **141** which are secured to the deck **2** by means of threaded plugs **10** adjacent one end of the boat. The seat **11** preferably is mounted for swiveling movement so that for the intended purpose of receiving a rower, such rower may face either the bow or the stern of the boat during rowing, the feature of swiveling thus enabling the rower to rapidly change the boat course by turning around the rowing position. Connected to the seat **11** and extending upwardly and outwardly therefrom are a pair of arms **12** at the ends of which are fixed oarlocks **13**. Thus, the seat **11** provides ready adaptation of the boat for rowing purposes.

For the additional purpose of carrying passengers as in recreational usage, the boat may be provided with bench **15** which is secured to the boat deck **2** by means of pads **140** in conjunction with use of plugs !**10** to hold the pads secure on the deck.

As an alternative form of propulsion for the boat, it may be provided with a shaft **21** extending transversely of the deck and secured thereto by means of brackets **22** and plugs **10**, there being fitted at opposite ends of the shaft paddle wheels **20**. Driving means for the paddle wheel unit can include a treadle or bicycle type motive unit including a frame **16**, handlebar **17**, saddle **18** and foot pedals **19**. A person seated on the saddle **18** thus employes his feet to turn the pedals **19** and drive a chain **23** connected with a sprocket (not shown) on the shaft **21**. Thus, the paddle wheels will be turned to provide propulsive force for the boat. Steering with such mechanism can be by means of a tiller assembly **225** connected by cables **226** to handlebar **17**.

FIGS. **1** and **7** depict a further form of propulsion unit which can be employed for propelling the boat. Such unit is an airscrew type device including a propeller **41** housed in a screened cage **46** and powered through a gasoline or other fuel driven engine **42**, **47**, the engine being supported from the deck by means of a standard **43** and including a control arm **44** for steering. An operator's seat **45** can be removably connected to the deck adjacent the airscrew.

In the event it is desirable to employ an outboard motor for propelling the boat, such motor **28** can be secured to the stern of the boat on a suitable upright mount **23**. The upright mount **23** includes a relatively wide plate-like part and a downwardly extending arm **25** which terminates in a pair of jaws **26** which as shown in FIG. **2** gird the keel of the boat. Another set of jaws **24** are provided to gird the deck of the boat at the stern and a forwardly extending plate **36** carries the weight of the mount and provides means with which the unit can be secured to the boat with plugs **10**. The motor **28** is secured to the mount **23** in known manner with its housing **29** extending below the water a sufficient distance to permit the propeller **30** to obtain a good bite in the water. For purposes of steering, the conventional tiller **37** of the motor can be used.

Provided as a part of the mount **23**, is a vertically depending rod **34** connected to plate **36** and having a crank **35** at the upper end. The rod at its lower end is fixed to a water plane **31** which is provided as a relatively flat widened plate pivoted as at **33** to the boat hull and having a straddling bracket arrangement **32** formed thereon for further securing the plane **31** to the hull. The plane **31** is provided for the purpose of raising and lowering the bow of the boat when it is being propelled at high speeds by an outboard motor or airscrew. Thus, by cranking rod **34** up and down the planing effect imparted to the hull by the underwater plane **31** can be altered.

The number and types of auxiliary devices which can be removably secured to the boat are limited only by the intended type of service of the boat. Thus, for example, an additional seat **38** having a mounting plate **39** integral therewith can be secured to the deck by means of plugs **10** to provide an additional seat for the helmsman.

FIG. **11** depicts another form of device, an outrigger float **310** which can be secured by means of outrigger arms **312** to the deck **2** using for that purpose the plugs **10** in the same manner as described earlier. The outrigger float in the usual manner enhances the stability of the boat, being at the same level as deck **2**. OUtrigger arms **312** can be made extendible if desired.

For the purpose of preventing excessive incursion of water on to the deck area resulting from spray and/or wave action, a canvass curtain **320** can be removably erected on the deck **2**. For this purpose, a number of upright standards **322** can be removably received in the tubular bore parts of the plates **8**, being spaced around the deck at suitable intervals and a canvass curtain **320** can be suspended from the tops of the standards **322**. The canvass at the bottom also could be led over the side of the boat as at **326** and be secured to the rings **5** at the undersurface of the deck overhanging part. A substantially rigid breakwater **330** can be used in conjunction with the curtain and can be mounted on the deck **2** in the same manner as the curtain **320**, the breakwater preferably being a one piece molded plastic device with suitable rubber base booting **334**.

In accordance with the present invention, the boat can be made as a collapsible structure in the manner depicted in FIGS. **3–5**. In this form the boat is made in identical front and rear halves **1***a* and **1***b* connected along the transverse centerline by a suitable hinge **39**, the boat in erected condition being maintained so by a latch **40**. When it is desired to collapse the boat to diminish its size for handling and storage, one part of the hull is pivoted or folded on to the other part to provide the arrangement shown in FIG. **5**.

Thus, it will be noted from the foregoing that the present invention provides a highly maneuverable, speedy boat which can be used for a number of purposes, including lifesaving, sailing and the like. In one form, the boat can have an overall length of substantially 15 feet and a beam at the transverse centerline of substantially 3 feet 8 inches with a maximum depth of 20 inches. Weight of such boat can vary between 60 and 120 pounds depending on the materials used for construction. The excellent seaworthiness and ease with which the boat of the present invention can be controlled makes it ideally suitable for lifesaving to the extent that in heavy storms it can be used to replace helicopters as the principal lifesaving unit of a rescue station.

The many uses to which the boat of the present invention can be put, in addition to those given above,

will be apparent to those skilled in the art. For example, the boat permits three persons to use the same while performing three different propulsion functions. Thus, one person can be seated on the seat **18** and power the boat through the paddle wheel arrangement **20**. A second person can row the boat from seat **11**, while a third person standing on the boat can use a large double-ended paddle for propulsion. In such instance, if the boat is being employed for a rescue, two of the persons propelling the boat are facing the direction of movement to further enhance the sighting of the person in the water in distress.

The boat also could be employed for sculling with short sculling oars. Because of the flat deck **2** which is close to the water, the boat is ideally suited for clandestine purposes due to the fact that being so close to the water it would be difficult to detect a person lying prone on the deck and approaching a hostile shore except at very close proximity to the boat.

Construction of the hull is such as to render the boat unsinkable in distinction with the known open types of boat hulls used for lifesaving purposes which if they become filled with water are susceptible to capsizing.

As will be apparent to those skilled in the art, modifications of the aforegoing described constructions can be made. For example, outrigger floats **312** can be mounted at both sides of the boat, hydrofoil fins could be added to the hull fore and aft, etc.

What is claimed is:

1. A boat having an elongated relatively shallow depth hull, said hull being symmetrically shaped at its opposite ends and enlarging substantially uniformly in width from a minimum dimension at rounded bow and stern parts of said hull to a maximum width at the transverse centerline location, the depth of said hull being at a minimum at said bow and stern parts and enlarging substantially uniformly toward said transverse centerline location to a maximum depth at said location, a substantially flat flush deck mounted on said hull and connected therewith in such manner to form a watertight enclosure for the interior of said hull whereby said boat is rendered substantially unsinkable, said deck having an overhanging part entending outboard of said hull, said overhanging part of said deck having a substantially flat underface, said hull having minimum freeboard whereby said flat underface substantially defines the normal waterline of said hull, and means for removably securing auxiliary devices to said hull, said means including at least one mounting plate fixedly secured to said deck and including a blind threaded tubular plug extending through said deck and internally of said hull, and a fastener screw removably receivable in said tubular plug for securing an auxiliary device to said deck.

2. A boat in accordance with claim **1** wherein the hull has a substantially elliptical plan outline.

3. The boat of claim **1** wherein the hull has a transverse sectional shape which is semi-elliptical.

4. The boat of claim **1** wherein the hull is filled with a foam-like filler material impenetrable to the passage of water therethrough.

5. The boat of claim **4** wherein said filler material has a specific gravity of less than 1.0.

6. The boat of claim **1** further comprising means secured to said boat by said plug and screw for propelling the same through the water.

7. The boat of claim **6** wherein said propelling means comprises a shaft extending transversely of said hull and secured to said deck for rotation about a fixed axis, paddle wheels fixed to opposite ends of said shaft, and driving means mounted on said hull for rotating said shaft.

8. The boat of claim **6** wherein said propelling means comprises a power operated airscrew fixed to said deck.

9. The boat of claim **1** further comprising a lifeline secured to said deck at the underface of the overhanging portion thereof.

10. The boat of claim **1** wherein said deck includes an encircling raised rim portion thereon extending around the periphery of said deck.

11. The boat of claim **1** wherein said hull is made in two identical portions, said portions being hingedly connected one to the other at the transverse centerline location of said hull thereby to permit collapsing of said hull into folded condition in which one portion nests on the other.

12. A boat having an elongated relatively shallow depth hull, said hull being symmetrically shaped at its opposite ends and enlarging substantially uniformly in width from a minimum dimension at rounded bow and stern parts of said hull to a maximum width at the transverse centerline location, the depth of said hull being at a minimum at said bow and stern parts and enlarging substantially uniformly toward said transverse centerline location to a maximum depth at said location, a substantially flat flush deck mounted on said hull and connected therewith in such manner to form a watertight enclosure for the interior of said hull whereby said boat is rendered substantially unsinkable, said deck having an overhanging part entending outboard of said hull, said overhanging part of said deck having a substantially flat underface, said hull having minimum freeboard whereby said flat underface substantially defines the normal waterline of said hull, means for removably securing auxiliary devices to said hull, said securing means including at least one mounting plate fixedly secured to said deck and including a blind threaded tubular plug extending through said deck and internally of said hull, and a fastener screw removably receivable in said tubular plug for securing an auxiliary device to said deck, an outboard motor for propelling said boat, and a frame mountable at one end of said hull for supporting said outboard motor, said frame comprising an upright plate on which said outboard motor can be supportably received, a pair of holding jaws connected with said plate and engageable with an end part of said hull, said upright plate including an elongated extension piece extendable to the underside of said hull and embodying means for engageably girding the keel of said boat.

13. The boat of claim **12** further comprising a flat, relatively broad plate-like planing member pivoted to the underside of said hull adjacent the stern thereof, said frame carrying a rod thereon which is engageable with said plate-like member for raising and lowering same relative to said hull.

14. A boat having an elongated relatively shallow depth hull, said hull being symmetrically shaped at its opposite ends and enlarging substantially uniformly in width from a minimum dimension at rounded bow and stern parts of said hull to a maximum width at the trans-

verse centerline location, the depth of said hull being at a minimum at said bow and stern parts and enlarging substantially uniformly toward said transverse centerline location to a maximum depth at said location, a substantially flat flush deck mounted on said hull and connected therewith in such manner to form a watertight enclosure for the interior of said hull whereby said boat is rendered substantially unsinkable, said deck having an overhanging part entending outboard of said hull, said overhanging part of said deck having a substantially flat underface, said hull having minimum freeboard whereby said flat underface substantially defines the normal waterline of said hull, means for removably securing auxiliary devices to said hull, said securing means including at least one mounting plate fixedly secured to said deck and including a blind threaded tubular plug extending through said deck and internally of said hull, and a fastener screw removably receivable in said tubular plug for securing an auxiliary device to said deck, at least one seat removably connected to said deck, said seat being located adjacent one end of said hull and provided with a pair of diverging arms extending upwardly thereof, and oarlocks carried on said arms.

15. The boat of claim 14 wherein said seat is rotatably supported for swiveling movement parallel to said deck.

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