

June 14, 1966

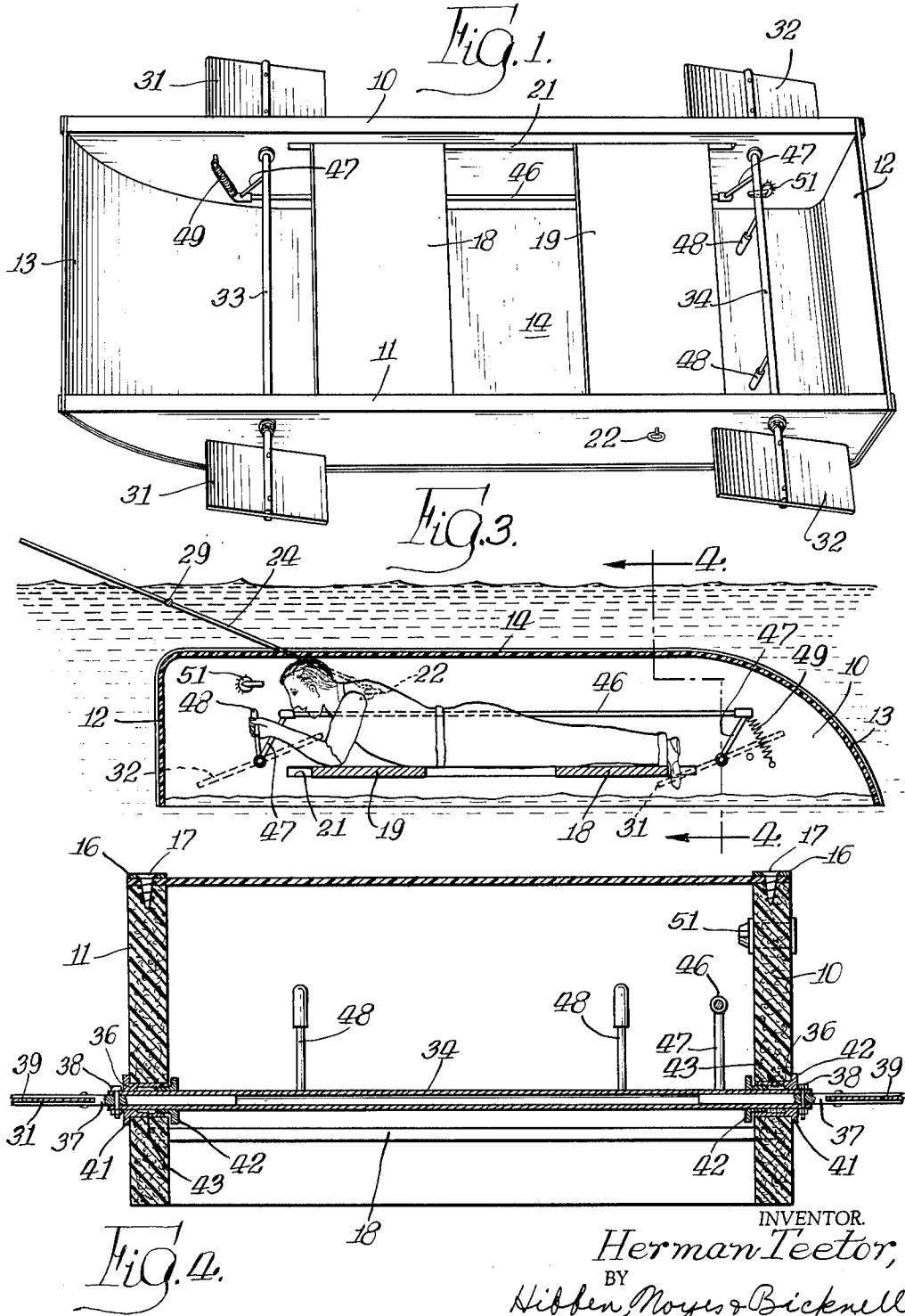
H. TEETOR

3,255,723

DUAL PURPOSE WATERCRAFT

Filed May 18, 1964

2 Sheets-Sheet 1



INVENTOR.
Herman Teetor,
BY
Hibben, Moyes & Bicknell,
Attys.

3,255,723

DUAL PURPOSE WATERCRAFT

Herman Tector, 30 15th Ave. S., Naples, Fla.

Filed May 18, 1964, Ser. No. 368,142

15 Claims. (Cl. 114--16)

This invention relates to watercraft, and more particularly to a craft which may be used either at the surface of the water or for diving purposes.

The current widespread enthusiasm for water sports has included an interest in underwater diving. Of special interest is equipment which will permit an individual to move about and remain underwater for several minutes. One disadvantage with currently available equipment is that it requires considerable expense to obtain and maintain. Another disadvantage with available equipment is that an individual using it must be relatively skillful before he can obtain satisfactory results. Equipment not having these disadvantages would of course be very desirable.

Accordingly, it is an object of this invention to provide a craft which may be used either in an upright position at the surface of the water or may be overturned and used for diving purposes, such dual purpose eliminating the expense of a separate device for each purpose.

It is another object to provide a dual purpose craft of the foregoing character, which will permit an individual using it to remain underwater for several minutes.

Another object is to provide a dual purpose craft of the foregoing character, which will permit an individual using it to move about underwater.

Still another object is to provide a dual purpose craft of the foregoing character, which will enable an individual using it to obtain an excellent view of underwater objects when the craft is in the upright position at the surface of the water.

A still further object is to provide a craft of the foregoing character, having built-in automatic safety features.

Other objects and advantages of the invention will become apparent from the following description taken in conjunction with the accompanying figures of the drawings, in which:

FIG. 1 is a perspective view of a craft embodying the invention;

FIG. 2 is another perspective view of the craft but showing the craft in a different position;

FIG. 3 is a reduced longitudinal sectional view of the craft when in the position shown in FIG. 2; and

FIG. 4 is an enlarged sectional view taken on the line 4-4 of FIG. 3.

In general, a watercraft embodying the invention comprises a wall structure forming a watertight hull sufficiently large to support an individual. The craft is adapted to be used either in an upright position at the surface of the water or in an overturned position either at or below the surface of the water. When the craft is in the overturned position, it is adapted to capture a pocket of air within the enclosure formed by the hull which renders the hull buoyant and provides a limited supply of air for an occupant to breathe. At least a portion of the wall structure is preferably transparent so that an occupant may view objects in the surrounding water and means is formed on the hull whereby the hull may be towed through the water when in said overturned position. Means is also formed on the hull for supporting the occupant with at least his head in the air pocket when the hull is in the overturned position, and manually operable control means is attached to the hull which permits the occupant to control the depth of the hull in the water as it is being towed through the water in the overturned position. The control means preferably com-

prises a plurality of planes attached to and extending outwardly from the wall structure of the hull, the planes preferably being tiltable about axes normal to the direction of motion of the dinghy as it is being towed. In addition, means is also provided for constantly urging the planes to a position where the dinghy rises to the surface of the water, this latter means being a safety feature.

In greater detail, a craft embodying the invention is illustrated in FIGS. 1 and 2 and comprises two side walls 10 and 11, end walls 12 and 13, and a bottom wall 14, the walls 10 to 14 being secured together to form a watertight hull. When the craft is in use, the side walls 10 and 11 and one end wall, in this instance the end wall 12, are substantially vertical, and the bottom wall 14 is substantially horizontal. The two side walls 10 and 11 may be substantially planar and are preferably made of a relatively lightweight material such as styrofoam, and the end walls 12 and 13 and the bottom wall 14 may be formed from a single rectangular sheet of transparent material such as heavy plastic. At the other end of the craft, the edges of the side walls 10 and 11 adjacent the bottom wall 14 may be curved upwardly to the upper edges of the walls 10 and 11, and the sheet of material forming the bottom wall 14 and the wall 13 at that end may follow these curved edges to form a sled-like construction. As shown in FIG. 4 two straps 16 may be positioned over the outer surface of the transparent sheet forming the end and bottom walls at the side edges thereof, and fasteners such as screws 17 may be inserted through the straps 16 and the transparent sheet and screwed into the side walls 10 and 11 for the purpose of tightly securing the transparent sheet to the side walls. In the event the transparent sheet is not strong enough to withstand the forces encountered during use, suitable strengthening ribs may of course be provided for the purpose of reinforcing the transparent sheet.

The craft further includes a plurality of seats 18 and 19 which extend between the side walls 10 and 11 and are connected thereto. The seats 18 and 19 are preferably generally rectangular members, and are supported by longitudinally extending slots 21 formed in the side walls 10 and 11, the slots 21 receiving the ends of the seats 18 and 19. The ends of the seats 18 and 19 are preferably loose in the slots 21 so that they may be adjusted longitudinally of the craft within the slots 21. Further, the slots 21 and the seats 18 and 19 are spaced from the bottom wall 14 sufficiently far that an individual may crawl into the space between the seats and the bottom wall and lie down on the seats 18 and 19 when the craft is in the overturned position, as shown in FIG. 3.

With regard to FIGS. 2 and 3, the hull is adapted to be attached to a tow boat and be pulled through the water with the end wall 12 facing forward and with the hull in the overturned position. To this end, a tow ring 22 is secured to each side wall 10 and 11 and extends outwardly therefrom, and a bridle hitch type of arrangement is provided, comprising two flexible lines 23 and 24 which are connected between a tow rope 26 and two hooks 28. The hooks 28 are adapted to be connected to the rings 22 when the craft is to be pulled through the water. A spreader bar 29 is connected between the two lines 23 and 24 and holds these two lines spaced apart beyond the adjacent end of the craft to prevent the lines 23 and 24 from rubbing against the hull.

The rings 22 must of course be properly positioned to give the craft stability as it is being towed through the water in the overturned position. If the rings 22 are too close to the end wall 12, that end of the craft will tend to rise upwardly and perhaps permit the pocket of air to escape. On the other hand, if the rings 22 are too far from the end wall 12, the craft will be unstable and tend

to nose over. In addition, the rings 22 must be properly positioned in the vertical direction to give stability. The proper position of the rings 22 and the proper position of the seats 18 and 19 are related to the size of the craft and the speed at which it is expected the craft will be towed when in the overturned position.

Means is also provided for controlling the depth of the craft as it is being towed through the water in the overturned position. As shown in the drawings, this means may comprise a plurality of elevators or planes including a pair of planes 31 adjacent the end wall 13 and a pair of planes 32 adjacent the other end wall 12. The planes 31 and 32 are preferably located outside of the side walls 10 and 11 and are tiltable on axes which are substantially normal to the direction of motion of the craft as it is being towed. To this end, shafts 33 and 34 are provided, the shafts 33 and 34 extending laterally of the hull and through openings 36 (FIG. 4) formed in side walls 10 and 11. The shafts 33 and 34 are preferably tubular members, and the flat planes 31 and 32 are secured to slotted rods 37 which are positioned in the ends of the shafts 33 and 34. The rods 37 may be secured to the shafts 33 and 34 by bolts or pins 38 which extend through lateral holes formed through the shafts 33 and 34 and the rods 37, the bolts 38 preventing both longitudinal and rotative movement of the rods 37 relative to the shafts 33 and 34. The planes 31 and 32 may be secured to the rods 37 by forming a longitudinal slot 39 through each rod 37 and positioning a plane in each slot and securing it to the rod as by welding or by screws.

To prevent water from entering the interior of the hull through the openings 36 and around the shafts 33 and 34, four watertight bearings are provided, each comprising an outer sleeve 41 and an inner sleeve 42 which are positioned around the associated shaft 33 or 34 and within an opening 36 (FIG. 4). For each bearing, the outer sleeve 41 includes a flange which overlies the outer surface of the side wall at the margin of the opening 36 and is tightly secured to the side wall. The portion of the outer sleeve 41 within the opening 36 is recessed, and packing 43 is positioned within the recess around the shaft. Internal threads are formed at the inner end of each outer sleeve 41 and the inner sleeve 42 is threaded into the outer sleeve 41 and compresses the packing 43 slightly, thus providing a watertight connection between the associated shaft and side wall. Water may enter the interior of the tubular shafts 33 and 34 but it cannot leak into the interior of the hull because the portion of each of the shafts within the hull is imperforate.

The shafts 33 and 34 are preferably interconnected in order to cause the four planes 31 and 32 to move equally. To this end, a link 47 is secured as by welding to each of the shafts 33 and 34 and extends substantially radially outwardly therefrom and a bar 46 is pivotally connected to the outer ends of the links 47.

The planes 31 and 32 may be manipulated by means of rod-like handles 48 which are secured to one of the shafts, in this instance, the shaft 34. The handles 48 extend from the shaft 34 generally toward the bottom wall 14 and may be grasped by an individual when in the position shown in FIG. 3. Further, biasing means is preferably provided for constantly urging the planes 31 and 32 to a position where they tend to cause the craft to rise to the surface of the water. This biasing means is a safety feature which will protect an individual using the craft in the event he becomes ill and cannot manipulate the planes to raise the craft. This biasing means may comprise a simple tension spring 49 (FIGS. 1 and 3) which is connected between one of the side walls 10 and 11 and the adjacent end of the bar 46. The spring 49 urges the shafts 33 and 34, and the planes attached thereto, in the clockwise direction as seen in FIG. 3, which is toward the position of the planes where they cause the craft to rise to the surface of the water when it is being towed to the left. In addition to the lift provided by the planes, the

buoyancy of the craft will also raise the craft. It is preferred that the craft is sufficiently buoyant that the planes must slope downwardly as shown in FIG. 3 to hold the craft underwater, and that the craft will automatically rise to the surface due to its buoyancy as soon as the handles 48 are released.

An individual using the craft may place it in the water in the upright position shown in FIG. 1 and either paddle or be towed through the water with the sloped end wall 13 forward. Since the bottom wall 14, in the form shown, is completely transparent the individual may observe the bottom or underwater objects with great clarity since there will be little disturbance due to reflections or ripples in the water. When the individual sees something that he wishes to investigate further, he first attaches the planes 31 and 32 to the shafts 33 and 34 if they were not previously attached to the shafts. This may be done simply by inserting the rods 37 into the ends of the shafts 33 and 34 and securing them together using the bolt and nut combinations 38. The individual then overturns the craft in such a manner as to capture a pocket of air within the enclosure formed by the hull, and he attaches the towing hooks 28 to the rings 22. Thereafter, the individual enters the pocket of air from below the craft and crawls into the space between the seats 18 and 19 and the bottom wall 14 and lies down on the seats 18 and 19. The longitudinal position of the seats 18 and 19 may be adjusted to obtain proper balance of the craft when in this position. As shown in FIG. 3, the individual faces the rearward wall 12 and grasps the handles 48 in order to manipulate the planes 31 and 32. The craft is then towed through the water by the tow boat with the rearward wall 12 forward. Since the wall 12 is transparent the individual has a good view ahead of him. Ordinarily the weight of the individual is sufficient to cause the planes 31 and 32 initially to extend into the water somewhat when the craft is stationary, and the individual by tilting the planes 21 and 22 downwardly as shown in FIG. 3, may cause the craft to move below the surface of the water as the craft is being towed. In the event difficulty is encountered in causing the craft to submerge due to excessive buoyancy, an air release valve 51 (FIGS. 3 and 4) may be provided in one of the side walls 10 and 11 at a position where it may be adjusted by the individual to permit some of the air to escape from the air pocket. This action reduces the buoyancy of the craft and permits it to submerge. The wall 12 is preferably normal to the direction of motion of the craft to provide increased stability. Since four planes are provided, one near each corner of the craft, the craft will always be substantially horizontal in the water and will not permit the air pocket to accidentally escape. The craft is very simple to operate since the operator need only manipulate the handles 48 to cause the craft to either move up or down in the water. Of course, the depth of the craft depends upon the speed at which it is towed and the angle of inclination of the planes 31 and 32. The amount of time an individual may remain under the water depends upon the individual and the size of the air pocket. In the event the individual becomes ill and releases the handles 48, the spring 49 will turn the planes 31 and 32 upwardly and the craft will immediately rise to the surface. If desired, a telephone may be provided having a line extending from the individual to the tow boat. This line may be attached to and follow the tow rope 26.

I claim:

1. A dual purpose watercraft comprising wall structure forming a watertight hull having one open side, which is adapted to be used in a conventional upright position with said open side uppermost and also be used in an overturned position with said open side lowermost, said hull being adapted to capture a pocket of air when in said overturned position, said pocket of air being bounded by said hull and by water partially entering said open side and pressurizing the air in said pocket, means formed on said hull for connection of said hull to a tow boat, said

5

means being formed to permit said hull to be towed when in said overturned position, means secured to said hull for supporting an individual with at least the individual's head in said air pocket when said hull is in said overturned position, and manually adjustable control means attached directly to said hull for controlling the depth of said hull while it is being towed in said overturned position.

2. A dual purpose watercraft as in claim 1, wherein said wall structure is generally rectangular in horizontal cross section and includes side walls, end walls and a bottom wall.

3. A dual purpose watercraft comprising wall structure forming a watertight hull which is adapted to be used in a conventional upright position and also be used in an overturned position, said hull being adapted to capture a pocket of air when in said overturned position, means formed on said hull for connection of said hull to a tow-boat, said means being formed to permit said hull to be towed when in said overturned position, means secured to said hull for supporting an individual with at least the individual's head in said air pocket when said hull is in said overturned position, and manually adjustable control means attached to said hull for controlling the depth of said hull while it is being towed in said overturned position, said wall structure including side walls, end walls and a bottom wall, said means for supporting an individual comprising at least one support which extends between opposing side walls and is connected to said opposing side walls, said support being spaced from said bottom wall for use as a seat when said hull is in said upright position and when said hull is in said overturned position, an individual may crawl between said support and said bottom wall and lie on said support.

4. A dual purpose watercraft as in claim 3, wherein said support is connected to said opposing side walls such that its position is adjustable longitudinally of said side walls to obtain desired balance.

5. A dual purpose watercraft as in claim 2, wherein one of said end walls has a transparent portion and is substantially flat, said one end wall being substantially normal to the direction of movement of said hull when it is being towed and facing in the direction of movement.

6. A dual purpose watercraft comprising a bottom wall, two side walls, and two end walls, said walls being secured together to form a watertight hull which is open at the side opposite said bottom wall and which is sufficiently large to support an individual, at least a portion of said bottom wall and at least a portion of one end wall being transparent, means on said hull whereby said hull may be attached to a tow boat and towed with said one end wall facing forward and said hull overturned and said open side facing downwardly, and adjustable planes attached directly to said hull for controlling the depth of said hull when said hull has been overturned in the water such as to capture a pocket of air within said hull, said pocket of air being bounded by said hull and by water partially entering said open side and pressurizing the air in said pocket and an individual may enter said pocket of air through said open side and cause said hull to submerge by manipulating said planes as said hull is being towed.

6

7. A dual purpose watercraft comprising a substantially horizontal bottom wall, two substantially vertical side walls, a first end wall and a substantially vertical second end wall, said walls being secured together to form a watertight hull which is adapted to be used in a conventional upright position and also be used in an overturned position, said hull being adapted to capture a pocket of air when in said overturned position, at least one seat extending between said side walls and attached at its ends to said side walls, said seat being spaced from said bottom wall sufficiently far that an individual may crawl between said seat and said bottom wall and lie on said seat when said hull is in said overturned position, at least a portion of said second end wall being transparent, means formed on said side walls for attachment of said side walls to a tow boat, said means being formed to permit said hull to be towed when in said overturned position and with said second end wall facing forward, and manually adjustable control means attached in said side walls for controlling the depth of said hull while it is being towed in said overturned position.

8. A dual purpose watercraft as in claim 7, wherein two seats are provided and the position of said seats may be adjusted toward and away from said second end wall.

9. A dual purpose watercraft as in claim 7, wherein at least a portion of said bottom wall is also transparent.

10. A dual purpose watercraft as in claim 7, wherein said control means comprises two pairs of planes adjacent the respective end walls, said planes extending outwardly from said side walls and being tiltable over axes which are substantially normal to the direction of motion of said hull while it is being towed.

11. A dual purpose watercraft as in claim 10, wherein said control means further include a pair of shafts, both of said shafts extending from one said of said hull to the other and through said side walls, said pairs of planes being secured to the ends of the respective shafts.

12. A dual purpose watercraft as in claim 11, and further including means for rotatably mounting said shafts in said side walls, said mounting means being watertight.

13. A dual purpose watercraft as in claim 12 and further including a bar interconnecting said shafts, and at least one handle secured to one of said shafts, adjacent said second end wall, whereby movement of said handle causes equal movement of said shafts and said planes.

14. A dual purpose watercraft as in claim 13, and further including biasing means for urging said planes to positions where they tend to move said hull upwardly.

15. A dual purpose watercraft as in claim 14 wherein said biasing means comprises a tension spring connected between said hull and said bar.

References Cited by the Examiner

UNITED STATES PATENTS

1,232,241	7/1917	Diamond	-----	114-16
2,843,860	7/1958	Grootveld	-----	114-16
3,160,133	12/1964	Walker	-----	114-16

MILTON BUCHLER, *Primary Examiner.*

T. M. BLIX, *Assistant Examiner.*