

April 11, 1939.

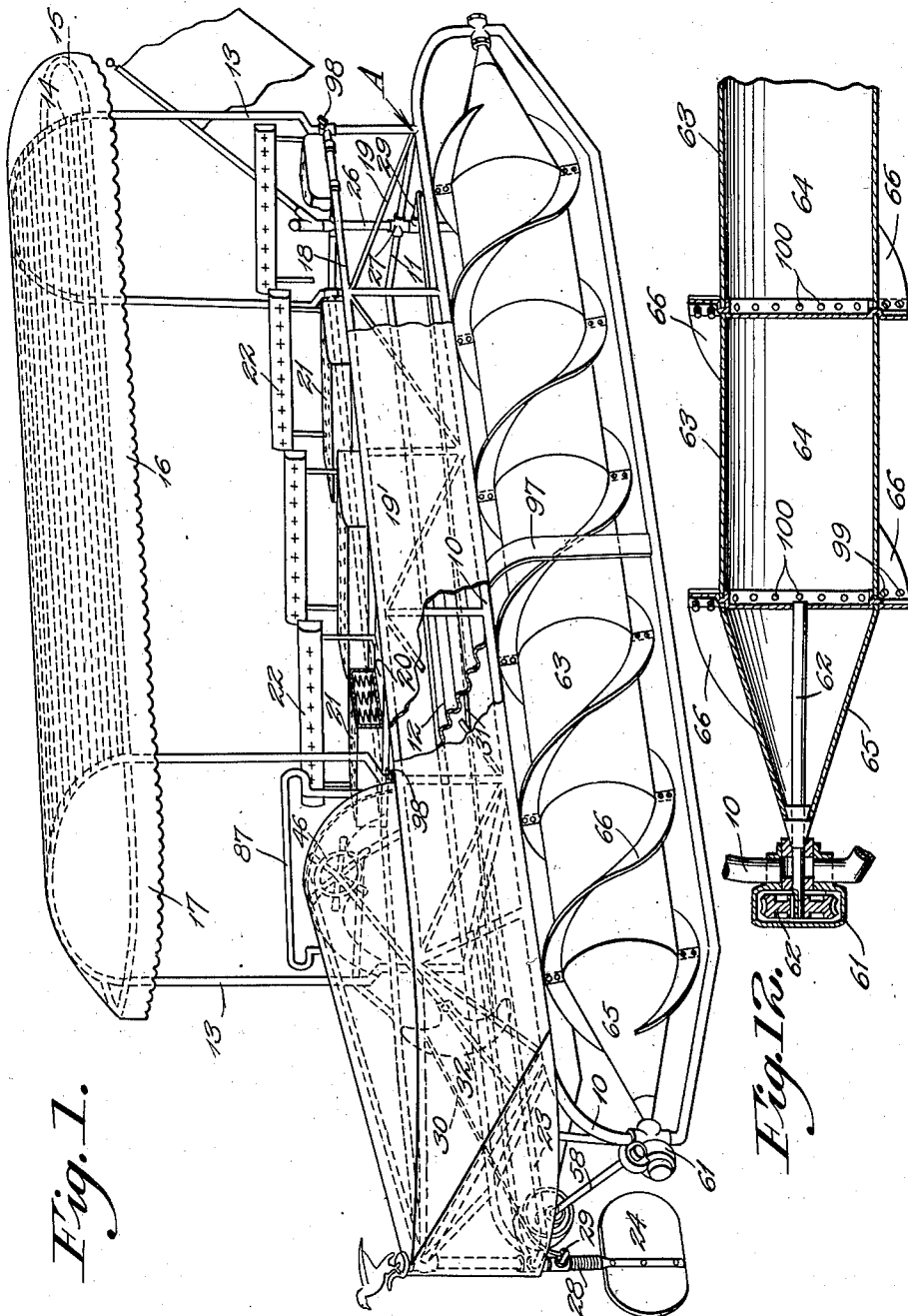
A. P. WELSH

2,154,191

HYDRO SAFETY CRAFT

Filed June 23, 1937

5 Sheets-Sheet 1



*R. E. Wise.*

*Alonzo P. Welsh*

INVENTOR

BY *Victor J. Evans & Co.*

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WITNESS

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5 Sheets-Sheet 2

Fig. 2.

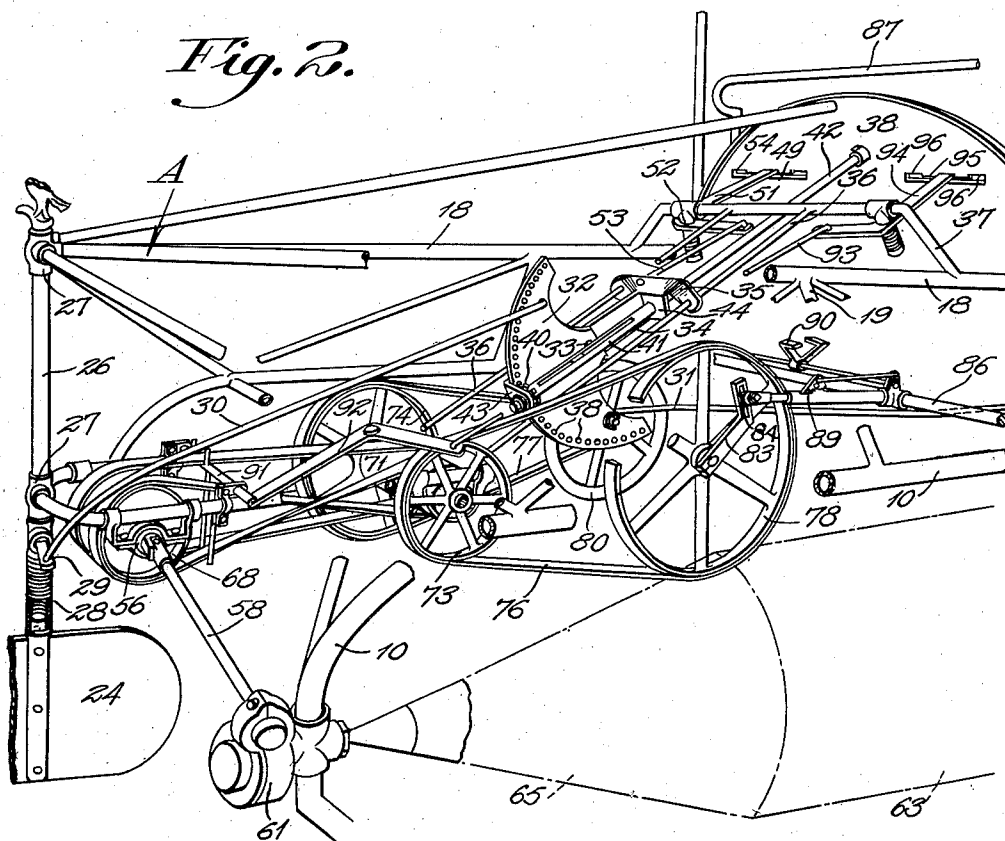
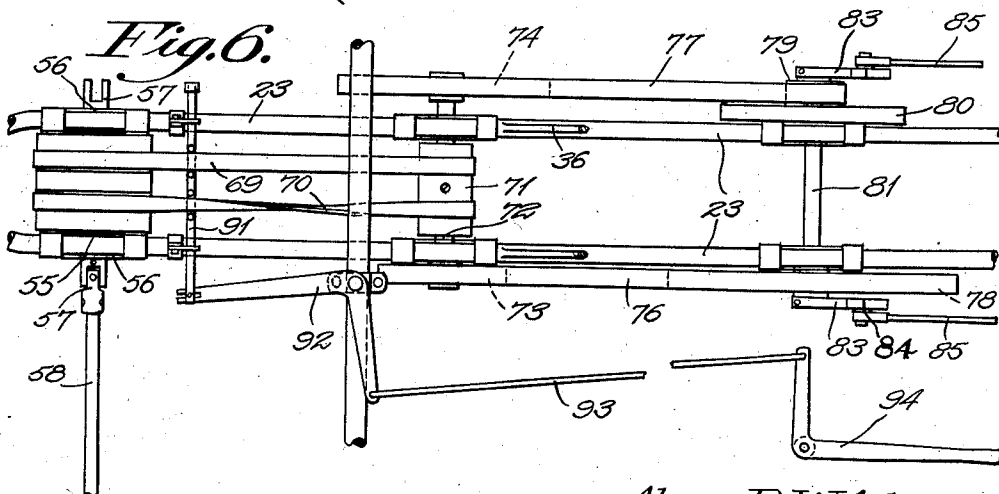


Fig. 6.



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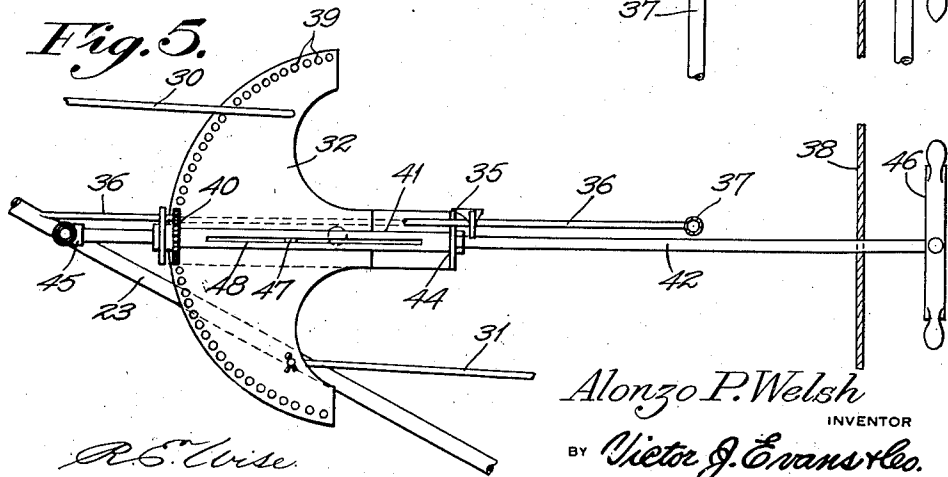
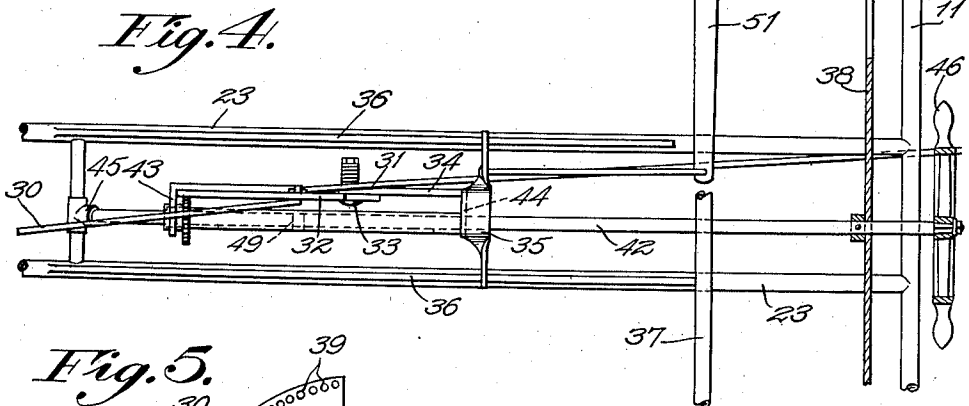
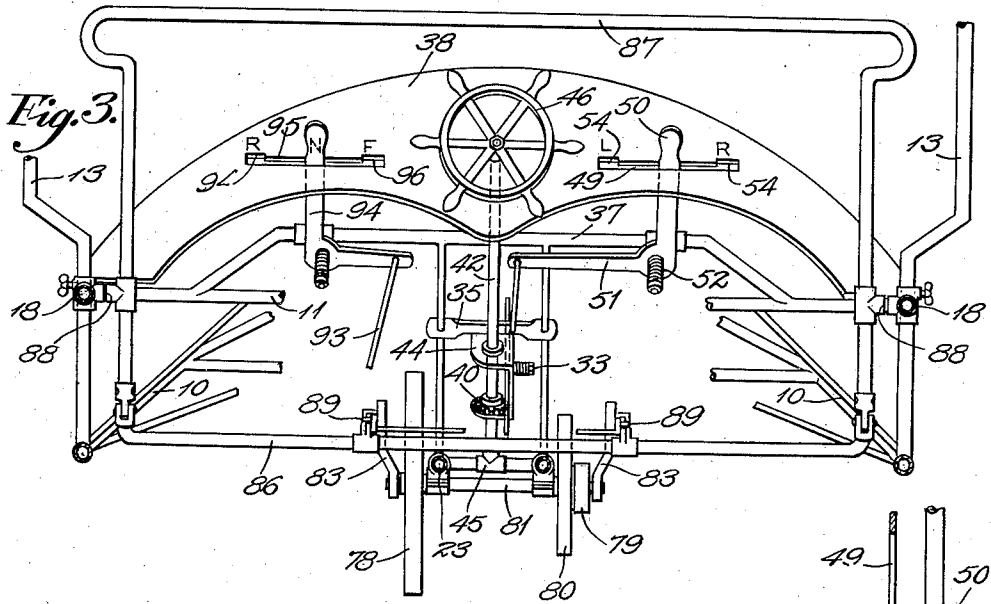
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5 Sheets-Sheet 3



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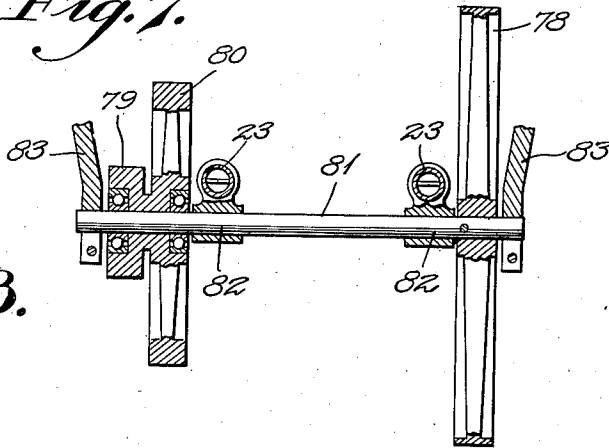
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HYDRO SAFETY CRAFT

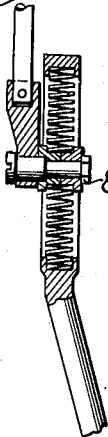
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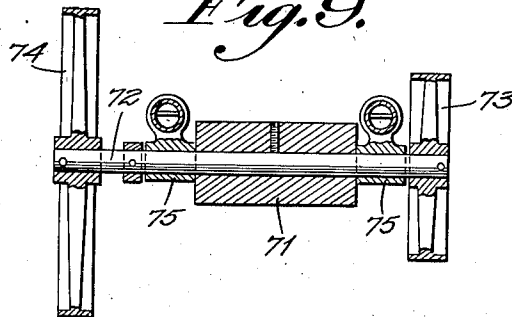
*Fig. 7.*



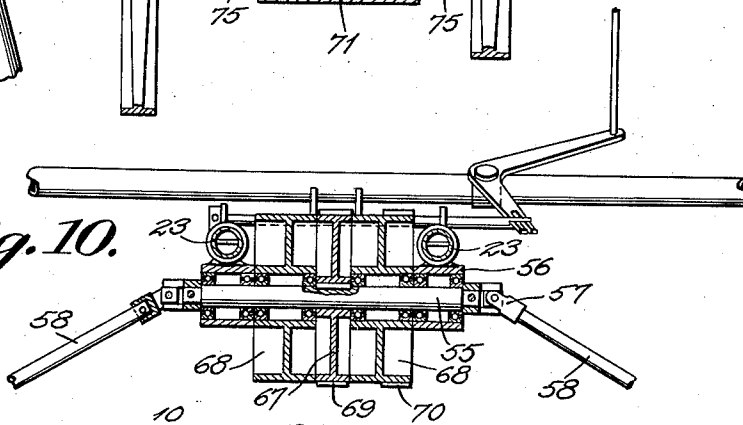
*Fig. 8.*



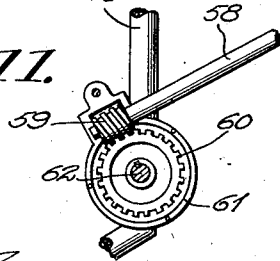
*Fig. 9.*



*Fig. 10.*



*Fig. 11.*



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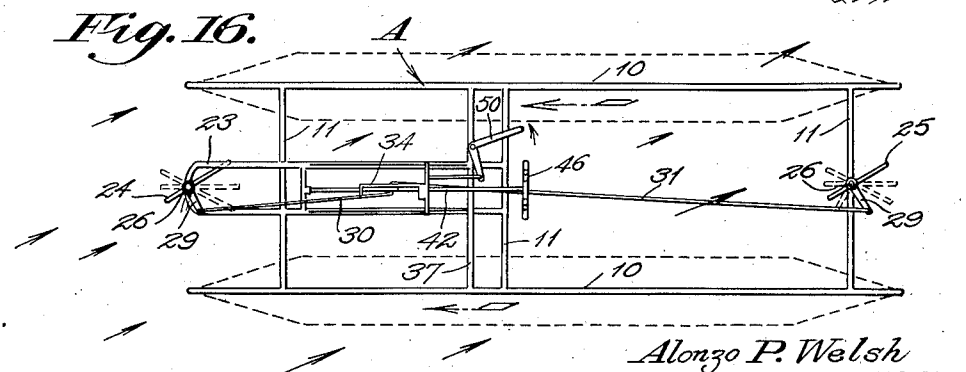
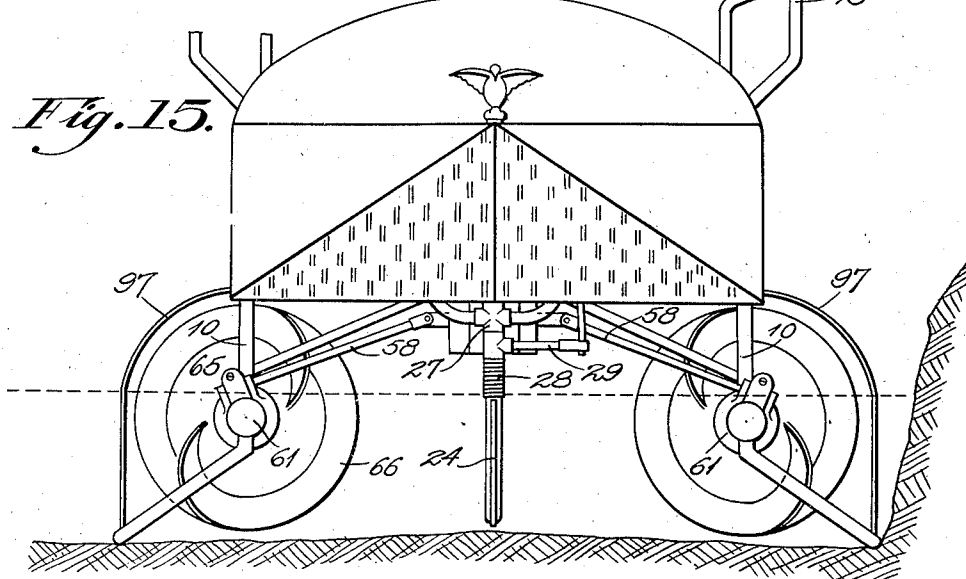
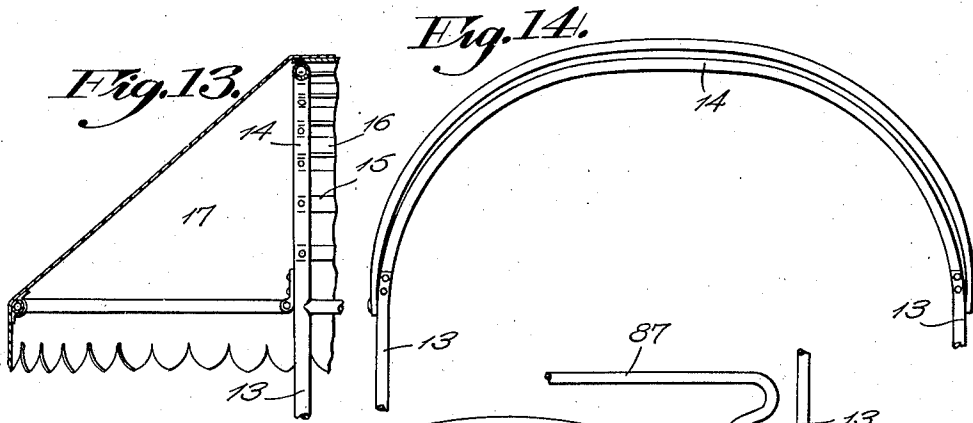
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5 Sheets-Sheet 5



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# UNITED STATES PATENT OFFICE

2,154,191

## HYDRO-SAFETY CRAFT

Alonzo P. Welsh, Tyler, Tex., assignor of one-third to Elizabeth R. Welsh, Springfield, Ohio

Application June 23, 1937, Serial No. 149,992

6 Claims. (Cl. 115—19)

The invention relates to a water craft and more especially to a hydro-safety craft.

The primary object of the invention is the provision of a craft in the form of a boat of this character, wherein in its creation there is assured maximum safety, comfort and speed and affording increased pressure in water navigation, the craft or boat being useful for lifeboats or other vessels, particularly at life saving stations where safety and speed are essential and also is adaptable for water sports and racing as well as for service for hunters and fishermen, being shallow floating and silent running.

Another object of the invention is the provision of a craft of this character, wherein the construction renders it practically indestructible and unsinkable, permits of passengers sitting in a low comfortable forward position, the seats being adjustable with backs and such craft is susceptible for forward or reverse motion and is hand propelled and includes an anti-drift arrangement which gives the operator complete control under all conditions during navigation.

A further object of the invention is the provision of a craft of this character, wherein the propelling mechanism involves an anti-dead center arrangement so as to avoid the propulsion mechanism from stopping on dead center, the said propelling mechanism being located in the bow of the craft to insure equal flotation and to have such mechanism visible to the operator for proper care and adjustment.

A still further object of the invention is the provision of a craft of this character, which is simple in its construction, thoroughly reliable and efficacious in its operation, practically silent in the working of the power unit, susceptible of making sharp right angular turns in the water and also counteracting side drift either through water currents or wind and thus enabling parallel landing with ease, the pontoons of the craft being protected against obstructions in the water while in motion and the rudders are guarded against damage by contact with obstructions and also comparatively inexpensive to manufacture.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter more fully described in detail, illustrated in the accompanying drawings, which disclose the preferred embodiment of the invention and pointed out in the claims hereunto appended.

In the accompanying drawings:

Figure 1 is a perspective view partly broken

away of a boat or craft constructed in accordance with the invention.

Figure 2 is a fragmentary perspective view looking toward the bow end of the boat or craft.

Figure 3 is a fragmentary vertical sectional view through the craft or boat.

Figure 4 is a fragmentary horizontal sectional view taken through the fore or bow end of the said craft or boat.

Figure 5 is an enlarged fragmentary vertical sectional view showing in detail the steering mechanism for the craft or boat.

Figure 6 is an enlarged fragmentary top plan view of the driving mechanism and adjuncts of the craft or boat.

Figure 7 is a vertical transverse sectional view thereof.

Figure 8 is a fragmentary top plan view partly in section of certain adjuncts of the craft.

Figure 9 is a view similar to Figure 7 but taken at a different area of the craft or boat.

Figure 10 is a front elevation partly in section through the driving parts of the craft.

Figure 11 is an elevation of certain gearing connections of said driving parts.

Figure 12 is a fragmentary vertical longitudinal sectional view through one of the pontoons of the craft or boat.

Figure 13 is a vertical sectional view through an end awning of the canopy for the craft or boat.

Figure 14 is a front elevation of the canopy with the end awning raised.

Figure 15 is a fragmentary front elevation of the craft or boat.

Figure 16 is a diagrammatic top plan view showing the anti-drift adjustment and the steering mechanism for controlling the craft or boat for avoiding side drive through force of side currents of the water.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings in detail, the craft or boat comprises a main frame A including spaced parallel open side members 10 and fore, aft and intermediate transverse or cross members 11, respectively, these being preferably made from tubular sections or pipes to give rigidity and strength throughout the entire extent of the frame and are joined in any suitable manner. Carried by the frame A is a corrugated sheet metal flooring 12 and rising vertically from this frame are uprights 13 formed with bows 14 joined with a canopy frame 15 for a canopy 16, the latter having associated both fore and aft of the craft

or boat or at opposite ends of said canopy awnings 17, these being vertically swung to raised or lowered positions in any desirable manner.

The uprights 13 have joined therewith above the side members 10 side guard rails 18 which are continued from the bow to the stern of the craft or boat while between the uprights braces 19 are provided for the said side guard rails 18. In association with the rails 18 is side paneling 19'. These rails 18 provide seat tracks upon which are slidably fitted adjustable seats 20 of any desired number, each being equipped with a bottom cushion 21 and a back 22, respectively. Each seat 20 may be adjustably secured in a fixed position in any suitable manner. The seat tracks constituted by the guard rails 18 are preferably positioned low to give low seating position to the occupants of the seats in the use of the craft or boat.

Suitably joined with the fore and intermediate transverse or cross members 11 and arranged at the longitudinal median of the frame A between the side members 10 thereof is a forwardly directed chassis 23 supporting a front rudder 24 while a rear rudder 25 is supported by the aft transverse or cross member 11. These Rudders 24 and 25 are provided with turning posts 26 vertically journaled at 27 and coacting with each post 26 is a coiled compression spring 28 permitting vertically yielding of the said post should the rudder meet an obstruction in the water when the craft is navigating and in this fashion avoiding damage to said rudder.

The posts 26 have fixed thereto cranks 29 to which are loosely connected throw rods 30 and 31, respectively, these being eccentrically pivoted to a throw segment 32 turnable on a pivot 33 upon a shift bracket or slide 34 having at one end a cross head 35 slidably upon spaced parallel guide rods 36, these being joined with and a part of the frame A being forwardly inclined from a riser yoke 37 immediately forward of an upright or perpendicular dash 38 fixed in the said frame A, the pivotal connections of the rods 30 and 31 with the segment 32 are located at opposite sides of its rotary axis constituted by the pivot 33 therefor. The segment 32 is formed with peripheral gear teeth 39 disposed in a circular path and meshing with a gear 40 fixed to a sleeve 41 on a steering post 42, the latter being carried through coupling eyes 43 and 44, respectively, the latter being formed with the cross head 35 while the eye 43 is bent from the slide 34 and the front end of this post 42 is rotatably journaled in a bearing 45 therefor on the frame A. The sleeve 41 is carried on the post 42 between the eyes 43 and 44 to be shifted by the slide 34 while the post 42 is extended rearwardly through the dash 38 in convenient reach of an operator of the craft or boat and is fitted with a steering wheel 46 at its rear end for the turning of said post. The post carries a key 47 accommodated in an elongated longitudinally directed slot 48 in the sleeve 41 and in this manner the said sleeve is rotated on the turning of the post for the rotation of the segment 32, the slot 48 limiting the extent of movement of the slide 34 on the shifting thereof upon the guide rods 36 in a manner and for a purpose hereinafter fully described.

The steering post 42 is forwardly inclined with respect to the upright or vertical dash 38 and is located at the longitudinal center of the frame A, the slide 34 and the sleeve 41 being similarly located. Working through the dash 38 in a slot 49 is a control handle 50 of a bell crank lever

51 pivoted at 52 on the yoke 37 in said frame A and this lever 51 has connected thereto a link 53 which is also connected to the cross head 35 of the slide 34 so that the latter can be shifted. On the shifting of the slide 34, the rudders 24 and 25 will be turned both at the bow and stern of the craft or boat to counter side drift thereof and maintain the same in a straight course while by operating the steering wheel 46 the said craft or boat will be guided for the turning thereof from a straight course in the water when navigating.

The slot 49 has provided therein keeper notches 54 for the control handle 50 and such notches are identified by suitable indicia such as the letters "L" and "R" provided on the dash 38 so that an operator when throwing the control handle 50 for seating in the selected notch 54 will know with certainty the adjustment of the rudders 24 and 25 for countering left hand or right hand side drift water or air currents.

The chassis 23 at the bow end of the craft or boat constitutes a mount for a power shaft 55 being held in suitable bearings 56 connected with said chassis and disposed crosswise of the latter. This shaft 55 at opposite ends has joined therewith universal knuckles 57 connecting driven shafts 58 therewith, each being fitted with a worm pinion 59 meshing with a worm gear 60, the pinion and gear being confined within a housing or casing 61 fitted with the forward end of the companion side member 10. This gear 60 is fixed to an axle 62 for a rotatable pontoon 63, being two in number, and are longitudinally journaled in opposite side members 10 of the frame A. Each pontoon is formed with separated independent air chambers 64 and opposite ends of such pontoon are reversely tapered at 65 while externally on both pontoons are spiral or screw blades 66 so that when the pontoons rotate, the craft or boat will be driven.

Fixed to the shaft 55 is a power pulley 67 while at opposite sides of the same are loose idle pulleys 68. With these cooperate the forward and reverse driving belts 69 and 70, respectively, which are trained about the same and also about a pulley 71 common to both belts and fixed to a shaft 72, the latter being fitted with belt pulleys 73 and 74, respectively, the shaft 72 being fitted in bearings 75 while trained over these pulleys 73 and 74 are belts 76 and 77, respectively, common to pulley wheels 78 and 79, the latter being formed with a balance or fly wheel 80. These pulleys 78 and 79 with the fly wheel 80 are carried by a shaft 81 suitably journaled at 82 in the frame A, the pulley 78 being fixed to said shaft while the pulley 79 and fly wheel 80 are loose thereon. The shaft 81 has fixed thereto at opposite ends cranks 83, these through yieldable anti-dead center connections 84 are joined with adjustable pitmans 85 which have connection with a foot treadle 86. The foot treadle 86 is pivotally connected to a swinging handle bar 87 pivoted at 88 for swinging movement so that the shaft 81 can be operated either by foot or hand. The pitmans are adjustable through the use of latches 89, these being released by a double foot pedal 90 carried by the treadle 86 and in this manner the telescoped pitmans enabling the stopping of the stroke of the handle bar on releasing the latches 89 with the foot pedal 90 without stopping the motion of the propelling mechanism in case of casting fishing rod or shooting duck, etc.

Coacting with the belts 69 and 70 is a belt shifter 91 controlled by actuating levers 92 and a connecting rod 93 associated therewith, the latter 75

being operated from a throw handle 94 working through the dash 38 in a slot 95. This slot 95 is formed with keeper notches 96 for accommodating the throw handle to hold it in a shifted position. The notches 96 are identified by suitable indicia such as the letters "R" and "F", respectively, indicative of forward or reverse operation of the craft or boat in the driving of the same. The handles 50 and 94, respectively, are in convenient reach of an operator of the craft or boat for convenient manipulation thereof.

The bow and stern ends are suitably cowled or hooded in a streamline manner.

The side members 10 extend about the pontoons 63 in a manner to relieve the same from obstructions and such side members are of substantially elliptical formation, being formed from tubing or piping.

By adjusting the rudders 24 and 25 in longitudinal alignment with each other, the boat or craft will have a straightway course in a water current as shown in Figure 16 of the drawings as shown by dotted lines and by turning the rudders at an angle to the longitudinal course this will effect an anti-drift operation as shown by full lines in said Figure 16 counter to side currents and by the simultaneous adjustment of the rudders fore and aft of the boat or craft, the latter can be turned sharply and in this manner enables parallel landing of the boat or craft. The anti-dead center connections 84 avoid the stopping of the fly wheel 80 on dead center at either end of the stroke of the pitmans 85.

The pulleys 67 and 68 of the propelling mechanism permit the starting, stopping, forward and reverse drive of the rotation of the pontoons 63 and in the propelling of these pontoons the operation of the craft or boat is practically noiseless. The operator has complete control of the craft or boat under all conditions and the latter can be guided in its course with ease and the guards constituted by the side members 10 function as skids when touching bottom, particularly when traveling in shallow water, and also permits of easy landing on a shore when the craft or boat is carried onto the same without any liability of damage to the pontoons or the spiral or screw blades 66 thereon.

Located intermediate of the length of the side members 10 are laterally curved combined braces and steps 97 which enable a person to readily step into the craft or boat from a landing and at the same time avoids damage to the pontoons or the blades or screws thereof as this will eliminate the stepping onto the said pontoons when making exit or entry from and to the craft or boat.

The uprights 13 are preferably sectional and are separably joined by set screws 98 and in this manner the canopy 16 with the awnings 17 can be readily removed from the craft or boat.

It is to be understood that the pulley ratio of the propelling mechanism may be changed to permit the use of motive power drive for larger sized crafts.

The screw blades 66, which constitute fins exteriorly on the pontoons 63, are composed of sections and these are interchangeable and replaceable by reason of separable fastening thereof through the use of screws 99 and likewise the pontoons 63 are bulk headed and are sectional being separably united to be watertight through the use of fasteners 100.

What is claimed is:

1. A craft of the character described compris-

ing a frame having spaced parallel open side members, rotary pontoons journaled within the open side members, spiral blades on said pontoons and extending throughout the major length thereof, driven mechanism associated with the frame and having connections with said pontoons for rotation thereof, yieldable anti-dead center connections included in said driven mechanism, a foot treadle adjustably joined with the anti-dead center connections, a swingable handle bar pivotally supported in the frame and swingably carrying said foot treadle, and latches for the joinder of the foot treadle with the anti-dead center connections.

2. A craft of the character described comprising a frame having spaced parallel open side members, rotary pontoons journaled within the open side members, spiral blades on said pontoons and extending throughout the major length thereof, driven mechanism associated with the frame and having connections with said pontoons for rotation thereof, yieldable anti-dead center connections included in said driven mechanism, a foot treadle adjustably joined with the anti-dead center connections, a swingable handle bar pivotally supported in the frame and swingably carrying said foot treadle, latches for the joinder of the foot treadle with the anti-dead center connections, rudders fore and aft of the frame and centered with each other longitudinally of the latter, and marginally controlled means for the said rudders and operating the same simultaneously in the same directional disposition.

3. A craft of the character described comprising a frame having spaced parallel open side members, rotary pontoons journaled within the open side members, spiral blades on said pontoons and extending throughout the major length thereof, driven mechanism associated with the frame and having connections with said pontoons for rotation thereof, yieldable anti-dead center connections included in said driven mechanism, a foot treadle adjustably joined with the anti-dead center connections, a swingable handle bar pivotally supported in the frame and swingably carrying said foot treadle, latches for the joinder of the foot treadle with the anti-dead center connections, rudders fore and aft of the frame and centered with each other longitudinally of the latter, marginally controlled means for the said rudders and operating the same simultaneously in the same directional disposition, and means coacting with the rudders for effecting yieldable tripping action thereof.

4. A craft of the character described comprising a frame having spaced parallel open side members, rotary pontoons journaled within the open side members, spiral blades on said pontoons and extending throughout the major length thereof, driven mechanism associated with the frame and having connections with said pontoons for rotation thereof, yieldable anti-dead center connections included in said driven mechanism, a foot treadle adjustably joined with the anti-dead center connections, a swingable handle bar pivotally supported in the frame and swingably carrying said foot treadle, latches for the joinder of the foot treadle with the anti-dead center connections, rudders fore and aft of the frame and centered with each other longitudinally of the latter, marginally controlled means for the said rudders and operating the same simultaneously in the same directional disposition, means coacting with the rudders for effecting yieldable tripping action thereof, and means associated

with the driven mechanism for regulating the operation thereof.

5 A craft of the character described comprising a frame having spaced parallel open side  
 10 members, rotary pontoons journaled within the open side members, spiral blades on said pontoons and extending throughout the major length thereof, driven mechanism associated with the  
 15 frame and having connections with said pontoons for rotation thereof, yieldable anti-dead center connections included in said driven mechanism, a foot treadle adjustably joined with the anti-dead center connections, a swingable handle bar pivotally supported in the frame and swingably  
 20 carrying said foot treadle, latches for the joiner of the foot treadle with the anti-dead center connections, rudders fore and aft of the frame and centered with each other longitudinally of the latter, marginally controlled means for the said  
 25 rudders and operating the same simultaneously in the same directional disposition, means co-acting with the rudders for effecting yieldable tripping action thereof, means associated with the driven mechanism for regulating the operation thereof, and a steering wheel extensibly associated with said rudder operating mechanism.

6. A craft of the character described, comprising a frame having spaced parallel open side

members, rotary pontoons journaled within the open side members, detachable spiral blades on said pontoons and extending thru the major length thereof, driven mechanism associated with the frame and having connections with said pontoons for rotation thereof, yieldable anti-dead center connections included in said driving mechanism, a foot treadle adjustably joined with the anti-dead center connections, a swingable handle bar pivotally supported in the frame and swingably carrying said foot treadle, latches for the joiner of the foot treadle with the anti-dead center connections, rudders fore and aft of the frame and centered with each other longitudinally of the latter, marginally controlled means for the said rudders and operating the same simultaneously in the same directional disposition, steering means co-acting with said rudders, said means comprising a steering column, an adjustable gear frame carried by said column, a slidable 20  
 25 slotted pinion sleeve movable on said steering column carried by said gear frame and controlled by a connecting rod, and a bell crank lever attached to said connecting rod, whereby an anti-drift or parallel landing may be effected by said craft while navigating river or tidal currents of water.

ALONZO P. WELSH.