United States Patent [19]

Szpytman

[11] **3,796,177**

[45] **Mar. 12, 1974**

[54] **WATERCRAFT**

[76] Inventor: **Jack J. Szpytman,** 910 N. Brys Dr., Grosse Point Woods, Mich. 48236

[22] Filed: **Dec. 6, 1971**

[21] Appl. No.: **205,017**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 150,419, June 7, 1971, Pat. No. 3,702,598.

[52] **U.S. Cl.** ..... **114/66.5 S,** 114/66.5 F

[51] **Int. Cl.**..... **B63b 1/00**

[58] **Field of Search**..... 115/37; 114/66.5 F, 66.5 S, 114/57, 219, 61, 62, 66.5 R

[56] **References Cited**

UNITED STATES PATENTS

1,777,258	9/1930	Meo	115/37
2,619,929	12/1952	Hoke	115/37
3,566,822	3/1971	Crewe	114/67 A
3,677,212	7/1972	Gregoire	114/61
2,735,392	2/1956	Cox	114/66.5 R

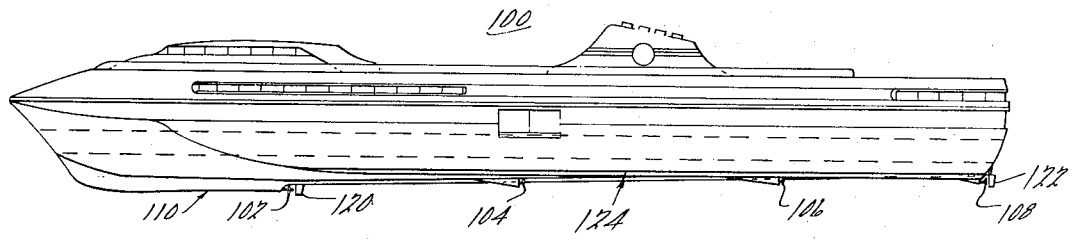
Primary Examiner—Trygve M. Blix

Assistant Examiner—Stuart M. Goldstein

[57] **ABSTRACT**

A watercraft is disclosed having an upwardly and aftwardly sloping central hull with a plurality of longitudinally-spaced drives located on parallel, distinct, longitudinally-extending axes to provide an efficient propeller arrangement with reduced drag from water turbulence. A pair of pontoons flank the central hull to compensate for the aftwardly-progressive reduction in the central hull displacement due to the upwardly-sloped hull and to provide efficient planing surfaces.

13 Claims, 4 Drawing Figures



PATENTED MAR 12 1974

3,796,177

SHEET 1 OF 2

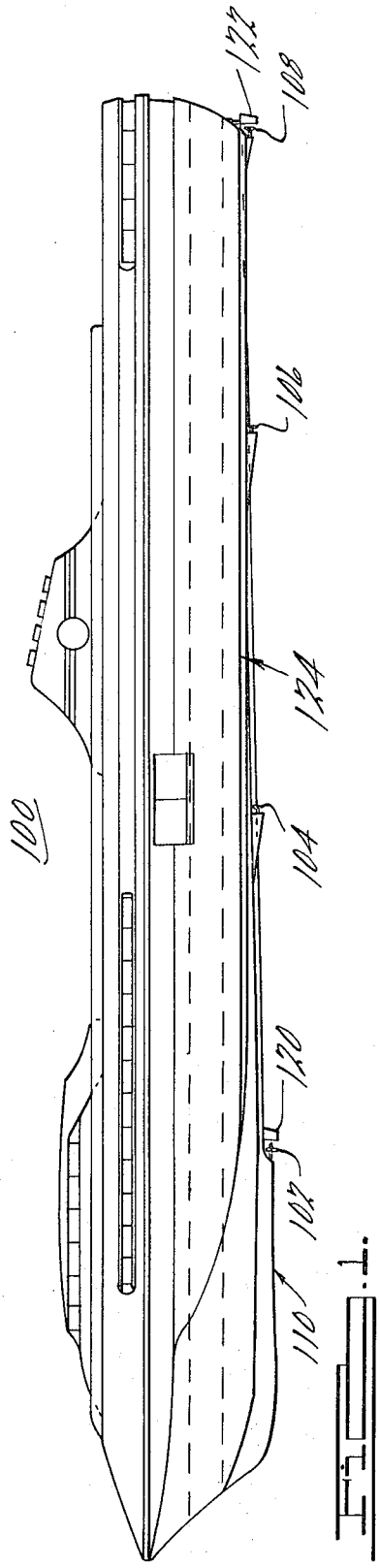


Fig. 1.

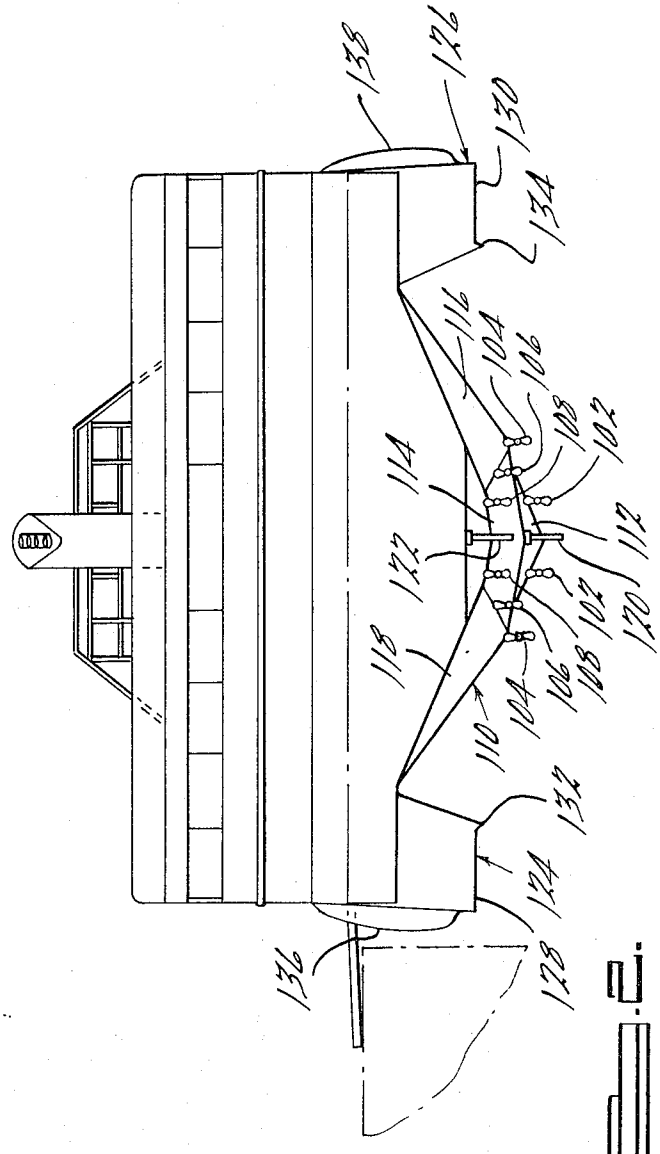


Fig. 2.

INVENTOR.

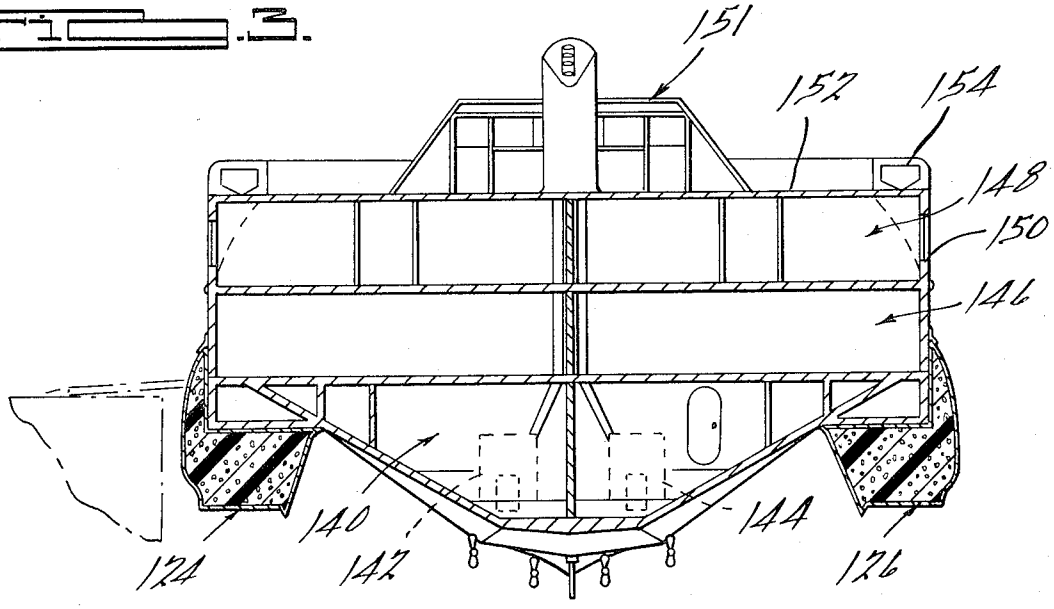
Jack T. Szpytman

BY

Harness, Dickey & Pierce

ATTORNEYS.

FIG. 3.



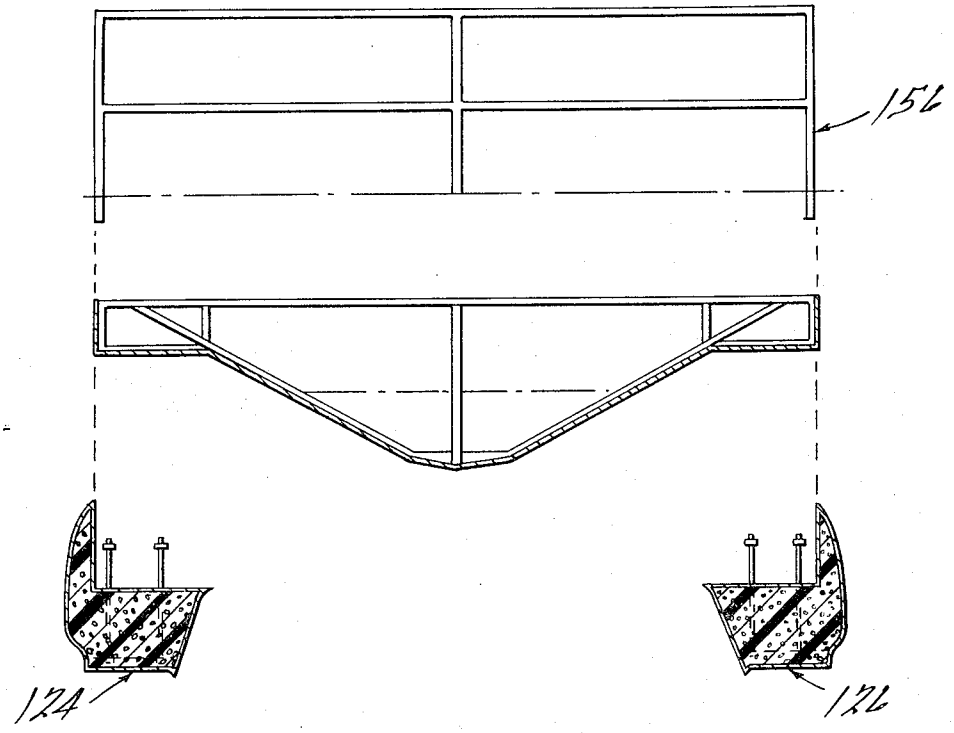


FIG. 4.

INVENTOR.
Jack J. Szpytman
BY
Harness, Dickey & Pierce
ATTORNEYS.

WATERCRAFT

CROSS REFERENCE TO RELATED APPLICATION

This application is a continuation-in-part of my copending application Ser. No. 150,419, filed June 7, 1971, for "Watercraft" which issued into U.S. Pat. No. 3,702,598. All of the disclosure of this related application is intended to be incorporated by reference in the present disclosure.

BACKGROUND AND SUMMARY OF THE INVENTION

The present invention relates to a watercraft having longitudinally-spaced drives on a central hull portion which slopes upwardly and aftwardly so that the drives are located on parllel, longitudinally-extending axes which are offset one from the other to provide efficient propulsion of the watercraft and to reduce drag from water turbulence caused by the drives. The drives may be conventional propellers, water-jets or other known means. When propellers are used as the drive means, the axes thereof are sufficiently separated so that the areas inscribed by the propellers occupy discrete locations when viewed from the stern of the watercraft, i.e. in a projected, vertical plane. Laterally-spaced, longitudinally-extending side pontoons or sponsons are affixed to and flank the central hull adjacent the upwardly sloped portion to compensate for the afterwardly-progressive reduction in displacement of the central hull as it slopes upwardly so that the watercraft has a horizontal attitude at rest. Each pontoon has a substantial horizontally-extending surface for planing of the watercraft upon attainment of a sufficient speed. Importantly, the pontoons provide both directional and roll stability so as to improve the ride motion of the watercraft. Preferably, the pontoons extend laterally outwardly from the watercraft so as to protect it and are replaceable in the event of severe damage. The pontoons may be filled with styrofoam or other flotation material to enhance the flotation capability of the watercraft in the event that it is severely damaged.

The watercraft is preferably provided with fore and aft rudders to provide simultaneous bow and stern control. The rudders are controllable independently so as to facilitate docking maneuvers.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side view of a watercraft according to the present invention having an upwardly and aftwardly sloping central hull portion with a plura'ity of longitudinally-spaced drives.

FIG. 2 is a stern view of the watercraft of FIG. 1.

FIG. 3 is a side cross-sectional view of the watercraft of FIG. 1; and

FIG. 4 is a view illustrating one manner in which the watercraft of FIG. 1 may be constructed.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In FIG. 1 a watercraft **100** of considerable size is illustrated which may be used to carry a substantial number of passengers and/or a substantial tonnage of cargo. The watercraft **100** has pairs of drives **102, 104, 106,** and **108,** from fore to aft, respectively. As best seen in FIG. 2, the pairs of drives **102–108** are located on an aftwardly and upwardly sloping central hull portion **110** so that the pairs of drives are conveniently provided with vertically offset longitudinally-extending axes. The central hull **110** may smoothly and continuously slope upwardly and rearwardly or may be created of discontinuous substantially planar surfaces **112, 114, 116** and **118** as illustrated. Preferably, the drives **102–108** are laterally and/or vertically offset a sufficient degree so that each drive means, e.g. a conventional propeller, circumscribes mutually exclusive areas in projected vertical plane. In this regard, the first and last pairs **102** and **108,** respectively, are not laterally offset since the vertical offset is sufficient to provide complete separation of the circles circumscribed by their propellers while the remaining pairs of drives **104** and **106** are laterally as well as vertically offset. It can be seen that the lateral and vertical spacing of the drive means **102, 108,** and specifically, the mutual exclusivity of the areas inscribed by each, provides a very efficient drive scheme whereby the turbulence created by the forward drives are less apt to undesirably affect the operation of the aftwardly-located drives. Furthermore, the interaction between the discharge currents of the drive means **102, 108** and the hull surface is minimized because of the upward slope of the hull to further contribute to the efficiency of the drive means of this invention.

The central hull portion **110** is also provided with a fore rudder **120** and an aft rudder **122** which may or may not be directly associated with one of the drive means **102, 108** as by positioning directly behind the drive means in the discharge path thereof. The fore and aft rudders **120, 122,** respectively, are preferably independently operable to provide independent and simultaneous bow and stern control to provide a high degree of manueverability. Also, preferably, the rudders may be interlocked when desired so as to operate in unison when desired.

The central hull portion **110** is flanked by laterally-spaced side pontoons or sponsons **124** and **126** which longitudinally extend for a substantial portion of the overall length of the watercraft **100** and provide added buoyant displacement which is related to the upward and rearward slope of the central hull portion **110** so that the longitudinal axis of the watercraft **100** is substantially horizontally oriented when the watercraft **100** is at rest (or at displacing speeds). More specifically, it wi'l be noted that the upward and rearward slope of the central hull portion **110** would cause the stern of the watercraft **100** to squat or to rest at an aftwardly downwardly angle if it were not for the buoyancy provided by the pontoons **124** and **126.** Consequently, it will be appreciated that the sponsons **124** and **126** coact with the upwardly and rearwardly sloping central hull portion **110** so as to maintain the longitudinal axis of the watercraft **100** substantially horizontally aligned when the watercraft **100** is at rest or at displacing speeds.

The pontoons **124** and **126** are provided with generally horizontally-extending, substantially planar surfaces **128** and **130** which provide an upward acting force when the watercraft **100** attains planing speeds. The pontoons **124, 126** may be further supplied with skegs or runners **132** and **134** which contribute to the directional stability of the watercraft **100.**

The pontoons **124** and **126** are also preferably provided with bulbous, laterally-outwardly projecting side portions **136** and **138** which serve to fend the watercraft **100** off docks and the like to protect the water-

craft **100** as best illustrated in FIGS. **2** and **3**. The sponsons **124** and **126** provide a high degree of lateral stability both when the watercraft is in motion, as by providing laterally-outwardly disposed planing surfaces as well as when the watercraft is at rest by providing laterally-outwardly disposed buoyant chambers thereby further contributing to the overall efficiency and safety of the design of the watercraft **100.**

It should be noted that the leading edges of the pontoons are aft of the leading edge of the central hull a sufficient distance so that the wake produced by the central hull substantially avoids the pontoons by generally passing forwardly of their leading edges. In this manner, turbulence caused by the wake of the central hull is reduced so as to contribute to the efficient operation of the craft.

In FIG. **3**, a cross-sectional view of the watercraft **100** is shown which illustrates a typical efficient arrangement of the passenger and cargo areas. In FIG. **3**, the engine compartment is indicated generally at **140** and is seen to contain propulsion units **142** and **144** which may be any suitable unit such as a diesel engine, steam turbine, etc. Also illustrated as a readily accessible cargo area **146** of convenient configuration for the on-loading, off-loading and storage of cargo, and a spacious passenger compartment **148** with ports **150.** A bridge or command **151** is situated on the upper level. The bridge **151** is flanked by decks **152.** Enclosed lifeboats **154** are disposed immediately adjacent the sides of the watercraft **100.**

In FIG. **4**, the manner in which the sponsons **124** and **126** may be attached to the watercraft **110** in order to be readily removable for replacement is illustrated. As also illustrated in FIG. **4**, the passenger and cargo section **156** is removable for replacement or substitution with an upper craft structure of differing function or design.

In view of the above-detailed description of the watercraft **100,** it will be appreciated that an improved highly-efficient drive system is provided in combination with a hull of enhanced stability. Consequently, the watercraft **100** is believed to constitute an improvement in water-borne craft which will rise to the challenge provided by other competitive types of passenger and cargo transportation.

While it will be apparent that the teachings herein are well calculated to teach one skilled in the art the method of making preferred embodiments of this invention, it will be appreciated that the invention is susceptible to modification, variation and change without departing from the proper scope of meaning of the subjoined claims.

I claim:

1. A craft which is at least partially water borne when forwardly propelled along the longitudinal axis of the craft including in combination:

a hull having a longitudinally extending central portion and longitudinally extending side portions in cooperative relationship,; and

propulsion means for propelling said craft including a plurality of longitudinally disposed drive means spaced sidewardly from each other and from the front to the rear of said central hull portion, said central portion being defined in part by upwardly and aftwardly sloping surfaces with a pair of said plurality of drive means being horizontally and vertically spaced adjacent to the ends of said surfaces with the vertical offset of said plurality of drive means being in accordance with said upwardly sloping longitudinally spaced surfaces.

2. A craft according to claim **1** wherein said upwardly and aftwardly sloping surfaces are such as to establish an aftwardly-progressive decrease in buoyant displacement of said central portion when propelled forwardly, said pair of side portions being so configured as to correspondingly compensate for said aftwardly-progressive decrease in buoyancy in said central portion so that said watercraft has a substantially horizontal attitude when water borne.

3. A craft according to claim **2** wherein said hull side portions each further include a generally horizontally extending planing surface for providing an upwardly-directed lifting force when said craft attains planing speeds.

4. A craft according to claim **3** wherein said side portions are pontoons which are adapted for removal from each side of said central portion for replacement thereof.

5. A craft according to claim **1** wherein said plurality of drive means includes pairs of drives with each pair being disposed at substantially the same longitudinal locations and each drive of each pair being laterally separated so as to be on opposite sides of the longitudinal center of said central portion.

6. A craft according to claim **1** wherein each of said drive means includes a propeller and each of said propellers circumscribes a mutually extensive area out of any substantial interference with each other.

7. A craft according to claim **6** wherein said plurality of drive means includes pairs of said drives having propellers with each pair being disposed at substantially the same longitudinal location and each propeller of each drive pair being laterally spaced the same distance from the longitudinal centerline of the hull.

8. A craft according to claim **7** wherein said pairs are vertically offset.

9. A craft according to claim **8** wherein said drives of sequential pairs are laterally spaced to a different amount so that the combination of said vertical offset and said different amount of lateral spacing is sufficient so that said propellers circumscribe mutually exclusive areas in a vertical projected plane.

10. A craft according to claim **1** wherein said side portions are pontoons which are releasably secured beneath the side edges of the hull.

11. A craft according to claim **10** wherein said side pontoons are hollow and are filled with styrofoam.

12. A craft according to claim **10** wherein said side portions have runners on the inner edge providing directional stability to the hull.

13. A portion according to claim **10** wherein an outer upwardly extending portions on the pontoons provide protection to the sides of the hull.

* * * * *

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,796,177 Dated March 12, 1974

Inventor(s) Jack J. Szpytman

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Col. 1, line 51, "plura'ity" should be --plurality--; Col. 2, line 9, after "in" first occurrence, insert --a--; Col. 2, line 46, "wi'l" should be --will--; Col. 3, line 27, after "command", the word --station-- should be inserted;

In the claims - Col. 3, line 32, the numeral "110" should be --100--; Col. 4, line 59, "portion" should be --craft--; Col. 4, line 60, "portions" should be --portion--.

Signed and sealed this 20th day of August 1974.

(SEAL)
Attest:

McCOY M. GIBSON, JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents

FORM PO-1050 (10-69)

USCOMM-DC 60376-P69
★ U.S. GOVERNMENT PRINTING OFFICE : 1969 O—366-334