Jan. 14, 1964 H. L. SCHOELL 3,117,544

BOAT HULL

Filed May 15, 1961 3 Sheets-Sheet 1

FIG. 1

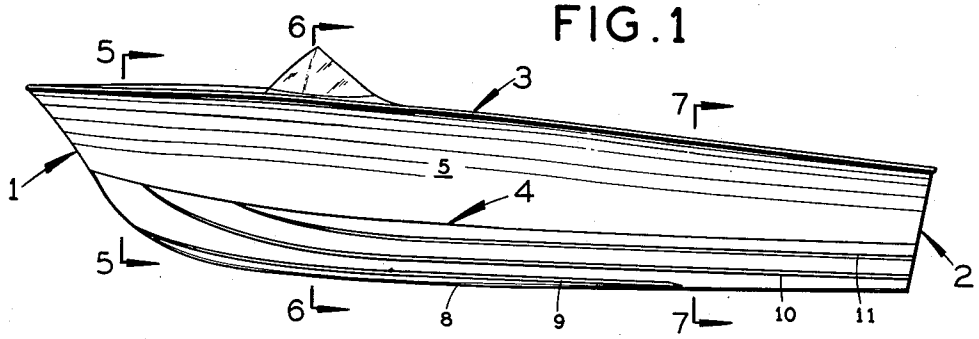
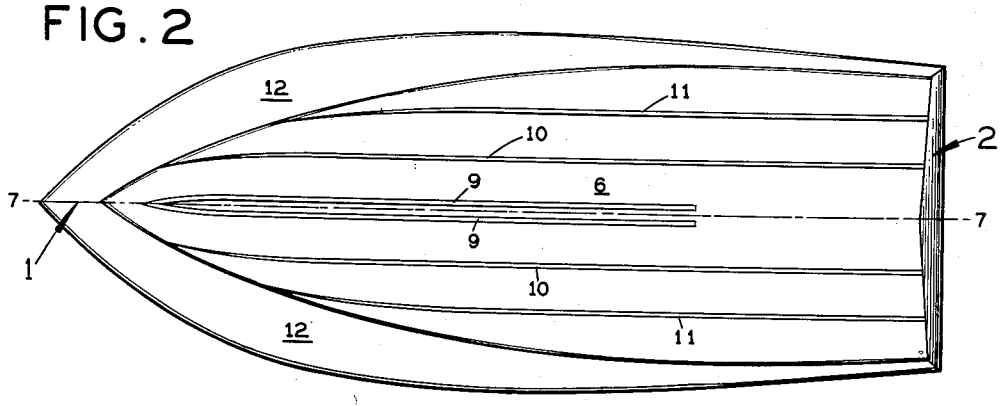



FIG. 2



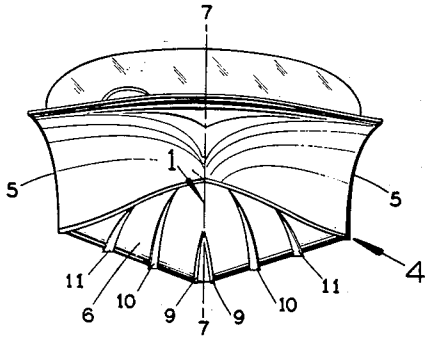




FIG. 3

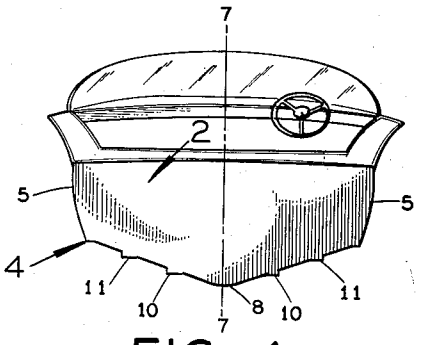



FIG. 4

*INVENTOR.*

HARRY L. SCHOELL

*BY*

Lloyd J. Anderson

Jan. 14, 1964 H. L. SCHOELL 3,117,544

BOAT HULL

Filed May 15, 1961 3 Sheets-Sheet 2

FIG. 5

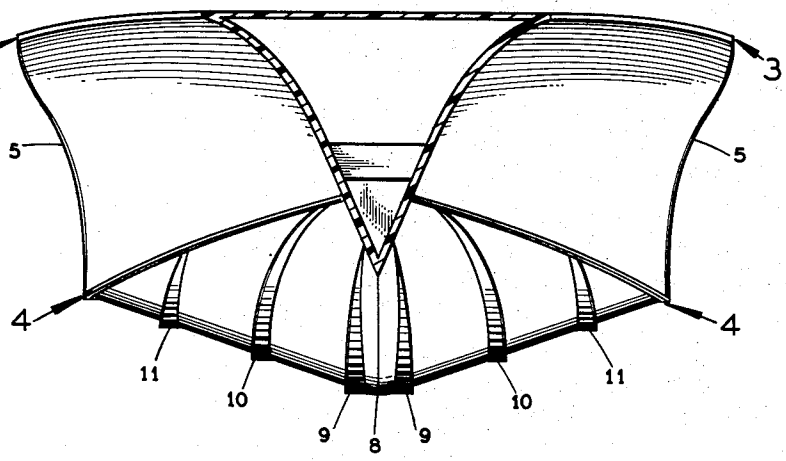
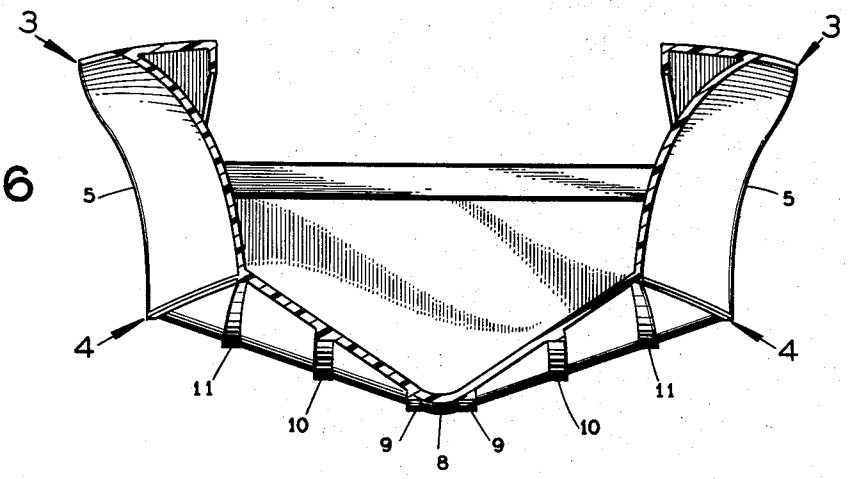



FIG. 6



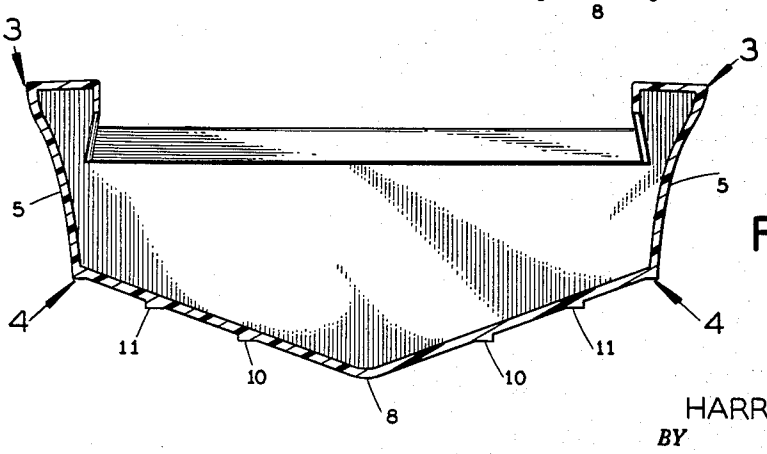




FIG. 7

*INVENTOR.*

HARRY L. SCHOELL

*BY*

Lloyd J. Anderson

Jan. 14, 1964 H. L. SCHOELL 3,117,544

BOAT HULL

Filed May 15, 1961 3 Sheets-Sheet 3

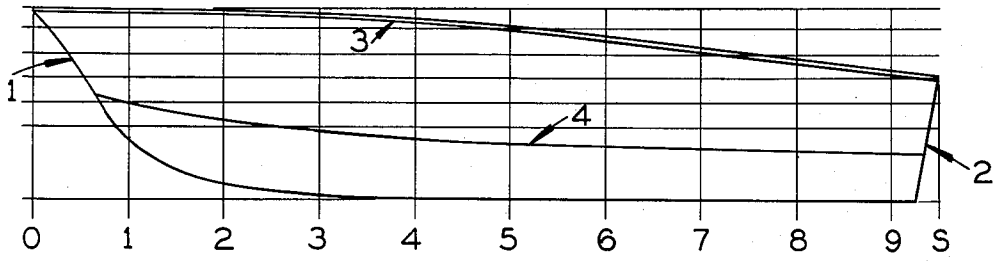



FIG. 8

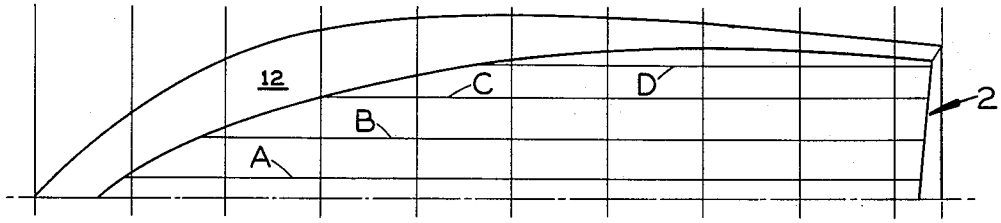



FIG. 9

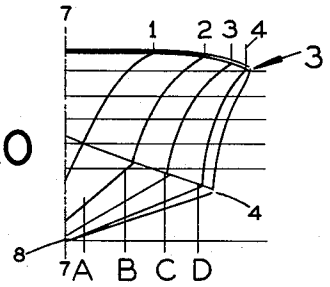



FIG. 10

OFFSET CHART IN FEET

| HEIGHTS | | | | | | | | HALF BREADTHS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STATION | SHEER | KEEL | CHINE | BUTTOCKS A | BUTTOCKS B | BUTTOCKS C | BUTTOCKS D | SHEER | CHINE | WATER LINES 1 | WATER LINES 2 | WATER LINES 3 | WATER LINES 4 | WATER LINES 5 |
| 1 | 3.875 | 1.270 | 2.000 | 1.635 | | | | 1.791 | 0.375 | 1.291 | 0.854 | 0.562 | | |
| 2 | 3.833 | 0.312 | 1.645 | 0.604 | 1.500 | | | 2.885 | 1.416 | 2.437 | 1.916 | 1.604 | 1.458 | |
| 3 | 3.739 | 0.093 | 1.416 | 0.229 | 0.812 | 1.437 | | 3.416 | 2.104 | 3.166 | 2.625 | 2.333 | 2.177 | 2.104 |
| 4 | 3.604 | 0.031 | 1.260 | 0.104 | 0.541 | 0.979 | 1.385 | 3.708 | 2.541 | | 3.104 | 2.770 | 2.625 | 2.562 |
| 5 | 3.416 | | 1.125 | 0.093 | 0.458 | 0.812 | 1.156 | 3.750 | 2.812 | | 3.385 | 3.041 | 2.895 | 2.822 |
| 6 | 3.250 | | 1.083 | | 0.416 | 0.750 | 1.020 | 3.677 | 2.979 | | | 3.229 | 3.083 | 3.000 |
| 7 | 3.041 | | 1.041 | | | 0.729 | 0.968 | 3.562 | 3.062 | | | 3.260 | 3.145 | 3.135 |
| 8 | 2.854 | | 1.010 | | | | 0.958 | 3.406 | 3.041 | | | 3.260 | 3.145 | 3.135 |
| 9 | 2.666 | | 0.989 | | | | | 3.250 | 2.864 | | | 3.208 | 3.041 | 2.968 |
| S | 2.479 | | 0.989 | 0.093 | 0.416 | 0.729 | 0.958 | 3.187 | 2.916 | | | 3.187 | 3.010 | 2.937 |

FIG. 11

*INVENTOR.*

HARRY L. SCHOELL

*BY*

Lloyd J. Anderson

United States Patent Office 3,117,544 Patented Jan. 14, 1964



3,117,544

# BOAT HULL

Harry L. Schoell, Miami, Fla., assignor, by mesne assignments, to Alim Association Incorporated, Miami, Fla., a corporation of Florida

Filed May 15, 1961, Ser. No. 109,954
3 Claims. (Cl. 114—56)

This invention relates in general to boats and more particularly to a hull for small craft adapted to be powered by inboard and outboard engines.

The principal features of the invention reside in the contour of the hull in combination with longitudinal stabilizing steps.

Prior to this invention, it was common practice to provide two types of hulls for small crafts adapted for relatively low and high speeds. The broad beam whale boat type hull, although stable at low speeds, is unsatisfactory at high speeds. Conversely, the relatively flat hulls of the planing type are unsatisfactory when used at low speeds because of excessive drag and inadequate stability. This is particularly evident in high speed hulls having a lateral step in the bottom thereof.

The hull hereinafter described overcomes the above major objections and disadvantages by the provisions of a surface contour including the use of longitudinal stabilizing steps which provide a minimum of drag and a high degree of maneuverability in an efficient manner when operated through a wide range of speeds, which construction is a principal object of the invention.

A further object of the invention is the provision of a hull for a boat which will maintain both lateral and longitudinal stability when propelled through a wide range of speeds and with a smooth performance with a proportionate reduction in draft to forward speed.

A further object of the invention is the provision of a hull having longitudinal steps for providing stable performance when accelerated from a forward slow speed with maximum draft to semi-planing operation at medium speeds to a maximum planing at minimum draft at high speeds and without excessive turbulence when operated at any of the aforesaid speeds within the range of the propulsion power.

These and other objects and advantages in one embodiment of the invention are described and shown in the following specification and drawings in which:

FIG. 1 is a side elevation of the hull in reduced scale.

FIG. 2 is a bottom plan view of the hull thereof.

FIG. 3 is a front elevation thereof.

FIG. 4 is a rear elevation thereof.

FIG. 5 is a cross-sectional view taken through section line 5—5, FIG. 1.

FIG. 6 is a cross-sectional view taken through section line 6—6, FIG. 1.

FIG. 7 is a cross-sectional view taken through section line 7—7, FIG. 1.

FIG. 8 illustrates longitudinal contour stations of the hull, shown FIG. 1.

FIG. 9 shows lateral contour stations of the hull.

FIG. 10 shows buttocks stations thereof.

FIG. 11 is a chart showing a ratio of offsets forming the contour of the hull.

One embodiment of the outer surface of the hull of the boat, shown FIGS. 1–4 inclusive, is shaped in accordance with the table of offsets, shown FIG. 11. The V bow 1, transom stern 2, sheer 3 and a chine 4 form the freeboard 5 and bottom portion 6 of the hull symmetrical about a vertical center plane 7, colinear with the keel 8 of the hull, as shown. The forward portion of the freeboard 5 terminates in an outward flair 12—12 and the relatively sharp V bow 1 smoothly diverges into the bottom 6 to a broad V at the transom, as shown FIGS. 1, 3 and 4.



Longitudinal steps 9, 10 and 11, having triangular crosssection, are integral with and project from the hull 6 in spaced relation on both sides of central plane 7, as shown.

It is to be noted that the steps 9—9 terminate a predetermined distance from the transom 2.

A preferred embodiment contemplates the above described hull molded from a laminate of fiberglass and resin into an integral one piece formtaion thus providing for a hull of accurate contour and smooth surface adapted to relatively low cost manufacture, as illustrated in FIGS. 5, 6 and 7.

It has been discovered that a hull having a relatively small draft contour ratio, as shown in the table FIG. 11, will provide relatively high efficiency when propelled at low speeds with lateral stability and maneuverability greatly enhanced by virtue of the stabilizing resistance to tilting and the precise control in the change in direction from rudder steering as a result of the high hydraulic resistance to any motion other than longitudinal.

When the propulsion of a boat having this hull is accelerated, and because of the gradually broadened V bottom, the boat will rise smoothly from the water and maintain a semi-planing position along the rear portion of the hull when high speeds are maintained.

The flair 12 tapering outward from the freeboard 5 on both sides of the hull prevents bow spray from entering the boat when the latter is operated at high speeds.

Certain modifications in the above construction utilizing the features described are intended to be within the scope of the appended claims.

Having described my invention, I claim:

1. In a hull for a small motor powered craft which includes a transom stern and freeboard sides from said stern terminating in a V-bow, a bottom structure comprising a keel, a bottom portion extending from said keel to the freeboard sides and transom stern of said craft, a plurality of longitudinal steps on said bottom portion substantially parallel to the vertical plane of said keel, the cross section of said bottom portion in a vertical plane substantially perpendicular to said keel coinciding with the equal sides of an isosceles triangle wherein the angle between said sides increases in regular fashion from an acute angle in the forward part of the hull to an obtuse angle in the after part of the hull, a step adjacent said keel extending from near said bow substantially less than the length of said bottom portion, at least two other of said steps outboard of the aforesaid step adjacent said keel extending substantially the length of said bottom portion from a place thereon spaced from said keel.

2. A bottom structure as claimed in claim 1 wherein the lower surface of each of said steps is coincident with a plane substantially perpendicular to the vertical plane of said keel.

3. In a hull for a small motor powered craft which includes a transom stern and freeboard sides from said stern terminating in a V-bow, a bottom structure comprising a keel, a bottom portion extending from said keel to the freeboard sides and transom stern of said craft, a plurality of longitudinal steps on said bottom portion substantially parallel to the vertical plane of said keel, the cross section of said bottom portion in a vertical plane perpendicular to said keel substantially coinciding with the equal sides of an isosceles triangle wherein the angle between said sides increases in a regular fashion from an acute angle in the forward part of the hull to an obtuse angle in the after part of the hull, a pair of said steps adjacent said keel extending from near the bow substantially less than the length of said bottom portion, at least

two other of said steps each outboard of the aforesaid pair of steps extending substantially the length of said bottom portion from a place thereon laterally spaced from said keel, the lower surface of each of said steps being coincident with a plane substantially perpendicular to the vertical plane of said keel.


**References Cited** in the file of this patent

UNITED STATES PATENTS

| | | |
|---|---|---|
| 649,525 | Nichol | May 15, 1900 |
| 1,935,622 | Eddy | Nov. 21, 1933 |
| 2,721,341 | Roberts | Oct. 25, 1955 |
| 2,956,292 | Newsome | Oct. 18, 1960 |
| 3,038,179 | Wagemaker | June 12, 1962 |
| 3,040,687 | Huet | June 26, 1962 |
| 3,077,172 | Dornak | Feb. 12, 1963 |

OTHER REFERENCES

U.S. Naval Institute Proceedings, pp. 128, 130, 131, vol. 85, No. 4, April 1959 (p. 130 relied upon).