

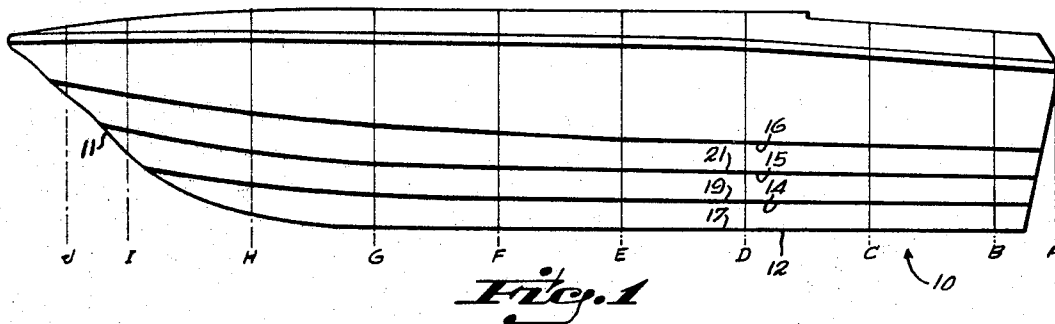
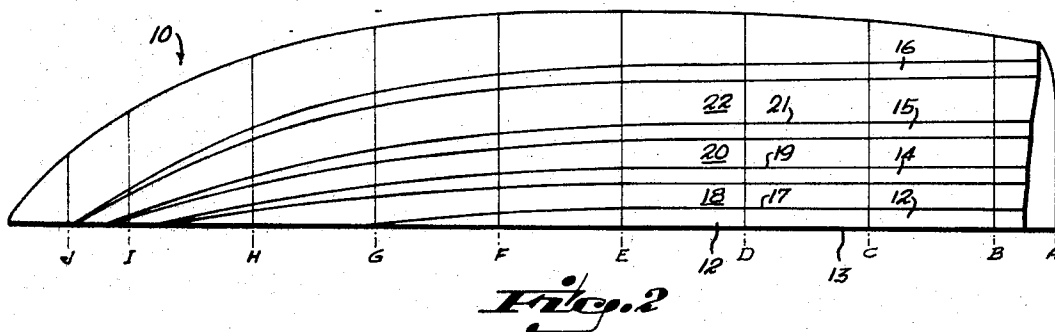
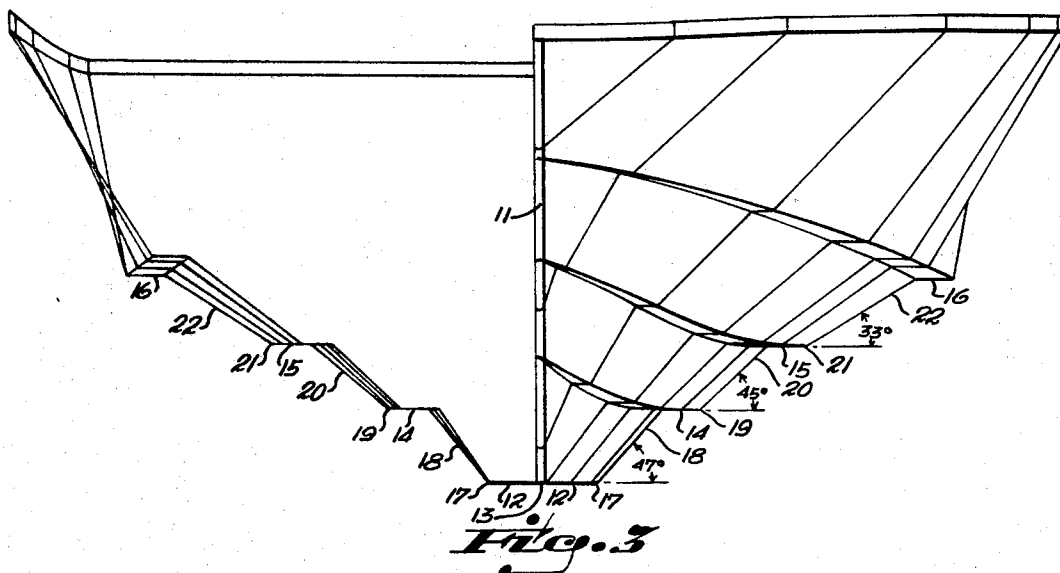
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BOAT HULLS

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BOAT HULLS

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ABSTRACT OF THE DISCLOSURE

A boat hull construction combining the best features of planing and displacement type hulls and being of substantially V-shaped cross-section along its length from stem to stern, the sides of the hull meeting at the bow to form a V-shaped prow and being formed along their lengths with a plurality of opposed pairs of laterally-outwardly-extending planar surface portions vertically spaced at each side of the hull and defining therebetween gradually decreasing amounts of deadrise upwardly of the keel.

This invention relates to boat hulls, and is directed particularly to an improved boat hull for boats and ships of all classes, being especially well-suited to application in larger vessels including, for example, merchant ships, naval vessels and passenger liners.

With the objective of reducing drag and thereby increasing speed, it is known to provide V-shaped boat hull bottoms with a plurality of longitudinal steps of triangular cross-section projecting outwardly of the hull in spaced relation at both sides of a central longitudinal plane. The steps serve to stepwisely raise portions of the hull bottom above the water line as speed is increased. While such hull construction may be suitable for certain classes of racing vessels, their comparatively poor lateral and longitudinal stability characteristics, because of their tendency to raise at the prow and thereby increase drag at the stern, render them unsatisfactory for general purpose motor vessels, yachts or ships, particularly vessels of comparatively great length or tonnage.

It is accordingly the principal object of this invention to provide an improved hull construction which combines the best features of planing type and displacement type hulls, while at the same time minimizing their undesired characteristics, i.e. to achieve the speed and efficiency of planing type hulls with the superior lateral and longitudinal stability characteristics of displacement type hulls.

It is a more particular object of the invention to provide an improved boat hull of the character described having a V-shaped prow extending into a generally V-shaped displacement type hull integrally formed within the sides of which, and extending lengthwise from stem to stern, are opposed pairs of sidewardly-extending horizontal plane surfaces defining therebetween, from the bottom of the hull upwards, longitudinally-extending hull sections of increasing angle, with respect to a horizontal longitudinal plane or, in other words, having gradually decreasing amounts of deadrise.

Another object of the invention is to provide a boat hull of the above nature which will, at the same time, be of sufficient beam along the greater part of its length, and of such draft, as to be well suited to cargo and passenger-carrying service with unusual stability, and which, at the same time, will be capable of high speeds and efficient operation, leaving practically no visible wake or drag.

Yet another object of the invention is to provide a hull which will be strong and simple in construction, pleasing in appearance, and unusually seaworthy in performance.

Other objects, features and advantages of the inven-

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tion will be apparent from the following description when read with reference to the accompanying drawings. In the drawings, wherein like reference numerals denote corresponding parts throughout the several views:

FIG. 1 is a side elevational view of a boat hull embodying the invention;

FIG. 2 is a bottom view of the hull at one side of the longitudinal midship line; and

FIG. 3 shows the body plan of the hull.

Referring now in detail to the drawings, **10** in FIGS. 1 and 2 designates, generally, a hull embodying the invention, the same comprising a V-shaped prow **11** extending into a substantially flat hull bottom portion or keel **12** extending outwardly of each side of the central keel line **13**. As shown in the body plan in FIG. 4, the hull is formed along its length with a plurality of pairs of laterally opposed, laterally-outwardly-extending planar surface portions **14, 14; 15, 15; and 16, 16**, arranged in vertically-spaced relation along the hull sides.

The first or lowermost planar surface portions **14, 14** define, with their respective keel portion edge lines **17**, a first pair of opposed, longitudinally-extending hull sections **18** inclined at an angle of approximately 47° with respect to the horizontal or, in other words, having a deadrise of about 47° ; the second planar surface portions **15, 15** define, with their respective lower edge lines **19** a second pair of opposed, longitudinally-extending hull sections **20** inclined at an angle of approximately 45° with respect to the horizontal, or having deadrise of about 45° , and the third or upper most planar surface portions **16, 16** define, with their respective lower edge lines **21**, a third pair of opposed, longitudinally-extending hull sections **22** inclined at an angle of approximately 33° with respect to the horizontal, or having a deadrise of about 33° . It is further to be noted that the opposed planar surface portions **14, 14; 15, 15; and 16, 16** maintain their full width and spaced, parallel relationship with respect to the keel for the greater part of hull length, being modified at the bow to a slight upward sweep with tapering width to meet from each side at the prow. It will thus be apparent that the greater the length of the hull, the greater the uniformity and parallelism of the opposed planar surface portions and the deeper the V-shape of the hull along the length.

It is to be noted that whereas in ordinary stepped hulls the horizontal "step" surfaces project outwardly of the hull, the planar surface portions **14, 14; 15, 15; and 16, 16** of this invention can be said, by comparison, to extend inwardly of the hull, or, in a manner of speaking, to comprise "negative" steps.

An important feature of hulls embodying the invention resides in their tendency to remain in the water for their entire length while at the same time providing lift all along the length with a narrow entry, thereby minimizing friction and drag and resulting in exceptional longitudinal stability even at high speeds.

Another advantage resides in its insensitivity to weight distribution along the length of the hull, thereby permitting a substantial increase in cargo carrying capacity and usable space.

Still another advantage of the invention is that its efficiency with respect to speed capability increases with increase in hull length for any given forward thrust.

While I have here illustrated and described my invention with reference to a comparatively small hull such as might be suitable for pleasure craft, it is to be understood that the principles of construction herein disclosed can be applied as well to boats and ships of all classes and tonnage for improved performance and efficiency. The invention, in brief, comprises all the modifications and embodiments coming within the scope and spirit of the following claims.

What I claim as new and desire to secure by Letters Patent is:

1. A boat hull having a bottom keel and sides together forming a hull body of substantially V-shaped cross-section along its length from stem to stern, said hull sides meeting at the bow to form a V-shaped prow, said hull sides being formed along their lengths with a plurality of opposed pairs of laterally-outwardly-extending planar surface portions vertically spaced at each side of the hull and defining therebetween gradually decreasing amounts of deadrise upwardly of the keel.

2. A boat hull as defined in claim 1 wherein said bottom keel comprises opposed longitudinal planar keel portions extending horizontally outwardly of each side of a central keel line.

3. A boat hull as defined in claim 1 wherein said opposed pairs of laterally-extending planar surface portions are at least three in number and said amounts of dead-

rise in degrees decrease by differentials of increasing value.

4. A boat hull as defined in claim 2 wherein said opposed pairs of laterally-extending planar surface portions are at least three in number and said amounts of deadrise in degrees decrease by differentials of increasing value.

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ANDREW H. FARRELL, *Primary Examiner.*