Feb. 29, 1944. N. TROYER 2,342,707

BOAT

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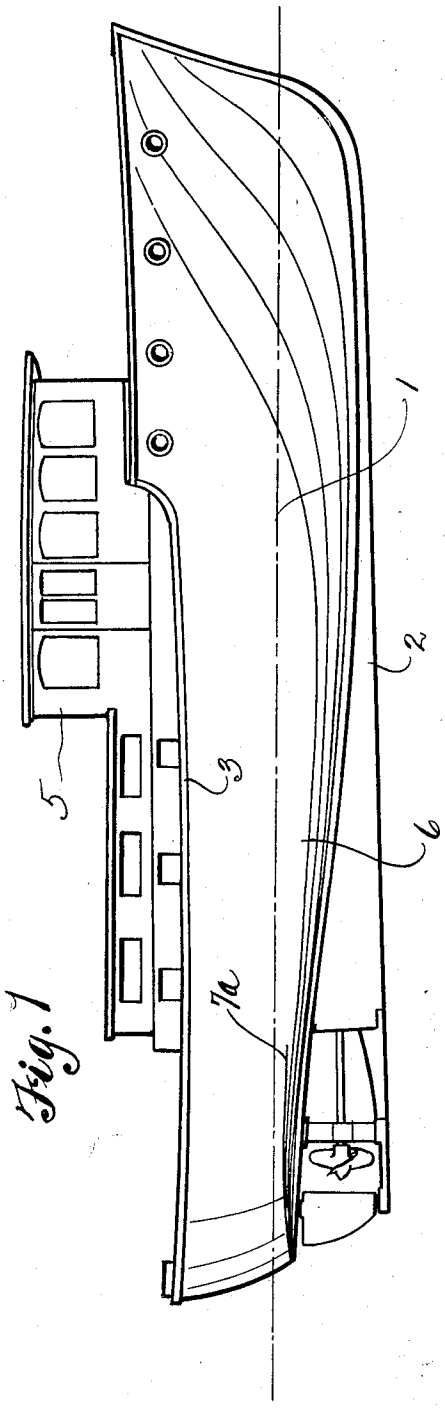


Fig. 1

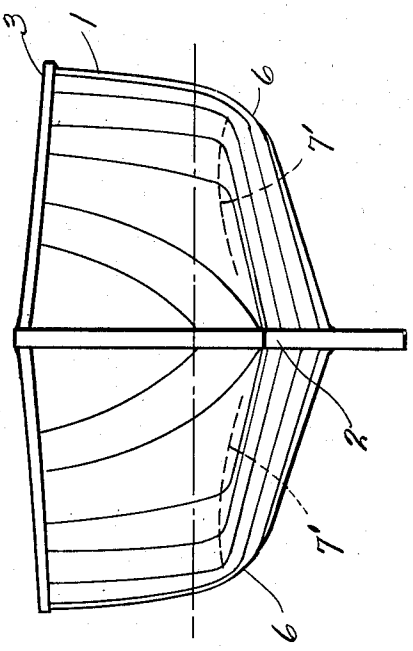


Fig. 3

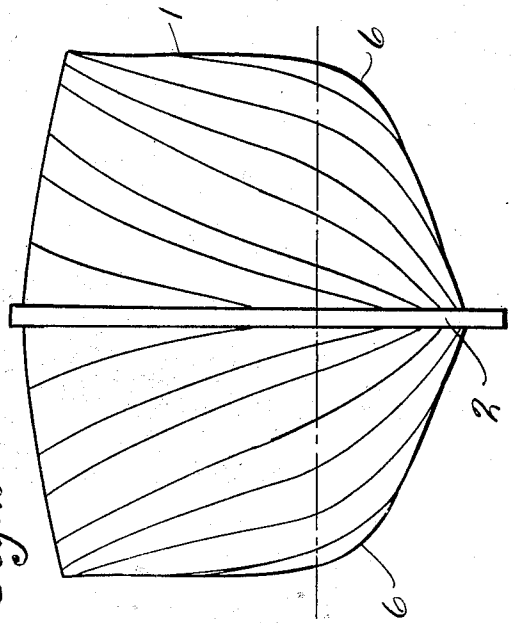


Fig. 2

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BOAT

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Fig. 4

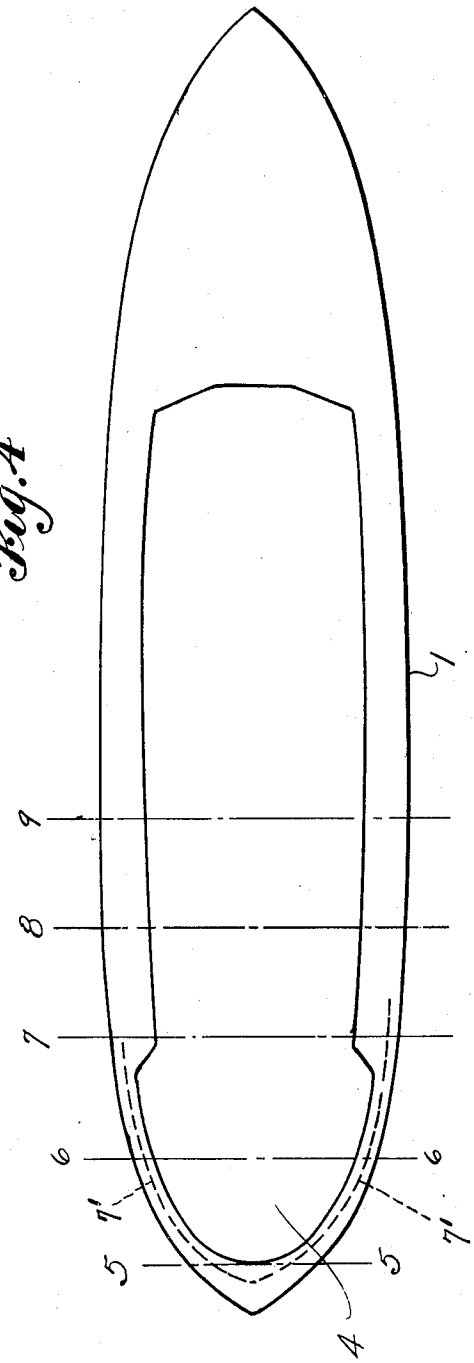


Fig. 9

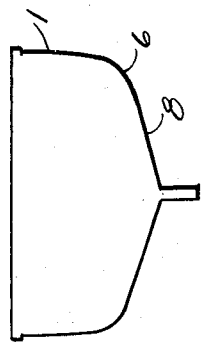


Fig. 8

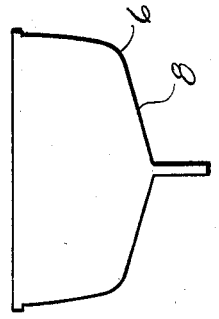


Fig. 7

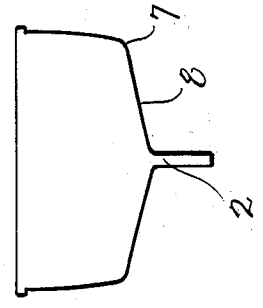


Fig. 6

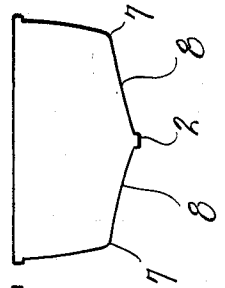
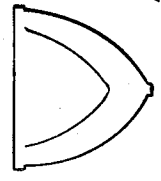


Fig. 5



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UNITED STATES PATENT OFFICE

2,342,707

BOAT

Nelson Troyer, Walnut Creek, Calif.

Application January 17, 1941, Serial No. 374,818

3 Claims. (Cl. 114—56)

This invention relates to improvements in motor driven boats, and it has reference more particularly to improvements in boat hull design; it being the principal object of the present invention to provide a boat having a hull of the "double ended" type, and embodying novel features in stern design that provides for satisfactory operation at increased speeds; for smoother running; which gives greater seaworthiness, and, in particular, which overcomes the tendency of the hull to "squat" or bury itself aft when the boat is driven at more than a moderate speed.

Explanatory to the present invention, it will here be stated that, while the orthodox "double ender" type of hull is a very good sea shape from the standpoint that it will rise and fall with the waves, and is advantageous especially in a following sea, it cannot be driven at more than a very moderate speed due to its tendency to bury itself aft; the greater the speed, the greater being this tendency of the stern to "squat" and the bow to rise from the water. It is because of this inherent characteristic that the "double ender" types of boats are now confined most generally to fishing boats, life boats, and others where speed is not a requirement or incidental to their particular use.

Practically all speed boats and power driven pleasure boats are constructed with the "transom type" stern, giving the square cut, sawed off appearance to the hull, and, while that type of construction has its advantages from the standpoint of increased speed, it also has a disadvantage in that such boats are poor performers in rough water, especially with a following sea. Also, exhaust gases have a great tendency to follow and flow into the cockpit.

In view of the disadvantages above related, and also in view of the advantages to be gained by the present type of construction, it has been the principal object of this invention to provide a type of double ended hull that, by reason of the specific form of stern design, overcomes all those disadvantages that are the results of the square cut, transom type stern, yet retains all of the advantages of such construction.

More specifically stated, the objects of the present invention; viz., the obtaining of increased speed, the provision of a more seaworthy craft, the insurance of smoother running and the overcoming of the tendency to bury the stern, are accomplished by the provision of a structure wherein a short chine, or knuckle is superimposed, or installed about the stern, and by a proper distribution of displacement, to compensate for the addition of this chine or knuckle.

In accomplishing these and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein—

Fig. 1 is a side elevation of a boat hull embodying improvements in accordance with the details of the present invention; the hull having the buttocks lines marked thereon for better understanding.

Fig. 2 is a bow end elevation of the boat hull, with lines thereon to show cross sectional shapes at different transverse vertical planes.

Fig. 3 is a stern end elevation of the hull, also lined to show cross sectional shapes at different intervals along the length of the hull.

Fig. 4 is a plan view of the hull.

Figs. 5 to 9 are cross sectional shapes taken on the correspondingly marked cross-section lines in Fig. 4.

Referring more in detail to the drawings—

The boat hull is designated in its entirety by reference numeral 1, the keel by numeral 2, the gunwales at 3 and the cockpit at 4. The cabin is designated by reference numeral 5. The hull has a bow end of the conventional pointed shape, while the stern structure also is pointed and embodies the improvements of the present invention. This stern shape will be best understood by reference to Figs. 1 and 4.

In the construction of the hull, the bow end may be of conventional form, but the stern portion, starting from approximately amidship, is formed with shoulders, as at 6, that merge from a slightly rounded form, as noted in Figs. 3 and 9, into a sharp cornered knuckle or chine 7, which is shown to best advantage in Figs. 6 and 7. To increase the stability of the boat, the bottom surfaces 8—8 at opposite sides of the keel 2, starting approximately at amidship, and extending rearwardly, are substantially flat, as noted in Figs. 7 to 9. The sharp cornered chine 7 extends around the stern and forward along the sides of the hull to the location where the water starts to break away from the boat when it is under way, and, in plan, this chine substantially coincides with the stern shape. In Fig. 3 and Fig. 4, the location and extent of the sharp cornered chine 7 is indicated by the dotted line 7', and in Fig. 1, it is indicated by the full line at 7a. It is noted also in Fig. 1 that the line of the chine has a slight downward dip as it approaches the rear end of the hull. This is due

to the "dead rise" shape of the hull location and to the slightly concaved and rounded shape of the stern and the merging of these lines toward the end of the stern. The sharp corner of the chine breaks the water contact and capillary attraction, tending to iron out the water as it leaves the hull, into a smooth wake. This slight dip of the line of the chine, taken in consideration also of the fact that the water line is accordingly increased, overcomes the tendency of the stern to sink or bury itself incident to increase in speed.

By reference to Fig. 3, and particularly to the contour lines shown on the elevational view, it is to be observed that the hull bottom, within this chine, is so shaped as to produce a planing action somewhat of the action produced by the usual transom stern construction, to thus obtain additional speed. Thus, it embodies the advantages of the usual square cut, flat bottom of the fast pleasure boats and speed boats. The particular shape, whereby the stern is extended rearwardly substantially farther than is the usual practise, gives a longer water line to the hull, lengthens and strengthens the buttocks, and thus brings about the smoother run. The particular shape of hull, with the extended water line, the pointed stern and novel bottom shape and sharp chine or knuckle, all cooperate in accomplishing the objects previously mentioned. However, in this connection it is well to point out that the particular design allows the longitudinal center of buoyancy to be placed the proper distance off center to suit the particular speed at which the boat is designed to run; this distance being governed by well known laws of hull design and has a direct relation to results obtained, and it is to be remembered that the maximum results from the present hull design are to be obtained only when proper consideration is given also to proper distribution of displacement in view of the particular details of design.

Sterns of this type are particularly advantageous in motor-sailer types, for heretofore, it has not been possible to combine a sailing hull with a fast power hull. This type also should be particularly applicable to trollers where there is a new and increased demand for speed.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent is—

1. A boat hull having pointed bow and stern portions, and formed below the water line with rounded shoulders extending rearwardly approximately from amidships, and merging into a sharp turned chine extended about the stern end of the hull just below the water line; said hull having flat bottom sections at opposite sides sloped downwardly from the chine to the keel knuckle.

2. A boat hull having pointed bow and stern portions and formed just below the water line about its stern portion with a sharp turned chine extending forwardly along opposite sides of the hull about half the distance to amidships and then gradually merging into rounded shoulders; the line of the chine being slightly downwardly dipped on approaching the extreme end of the stern.

3. A boat hull with bow and stern portions tapered to points and formed about the stern, just below the water line with a sharp turned chine extending forward along opposite sides of the hull for approximately half the distance to amidships and there gradually merging into rounded shoulders, and the line of the chine with reference to a horizontal plane being somewhat downwardly dipped as it aproaches the extreme end of the stern, and said hull having flat bottom sections throughout the extent of the chine sloping from the chine to the keel knuckle.

NELSON TROYER.