July 13, 1937. G. A. WOOD 2,086,593

BOAT

Filed Dec. 24, 1934 2 Sheets-Sheet 1

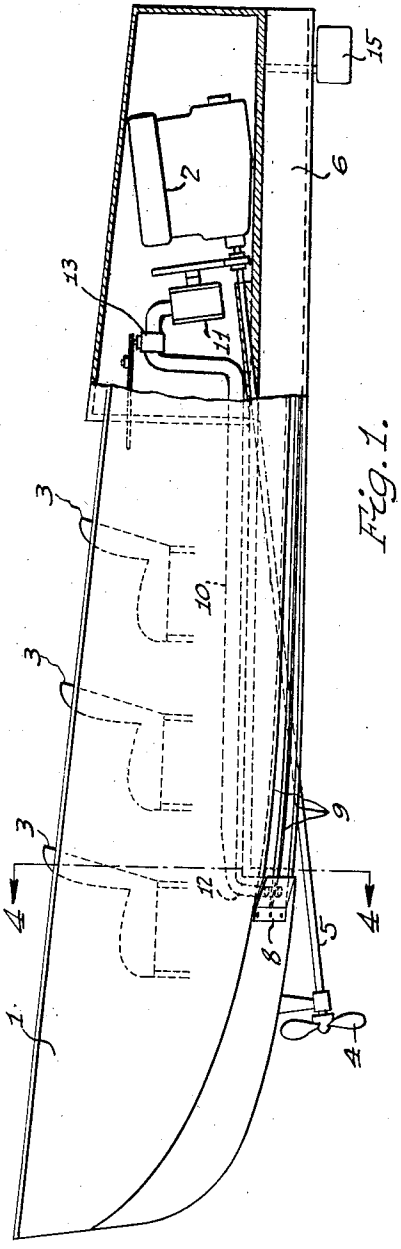


Fig. 1.

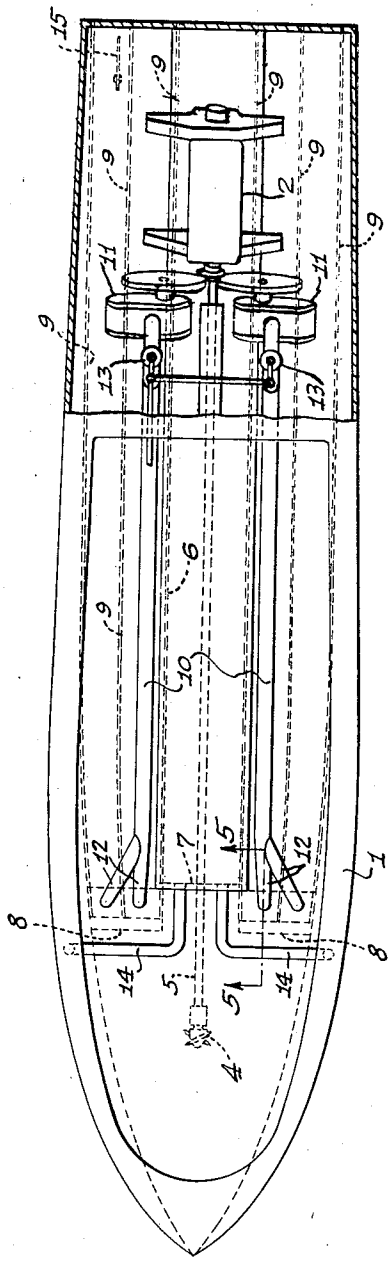


Fig. 2.

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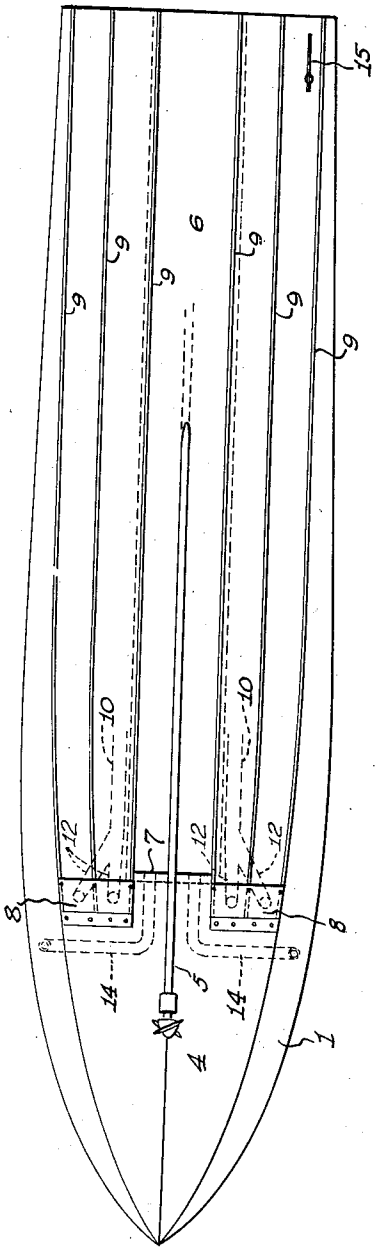


Fig. 3.

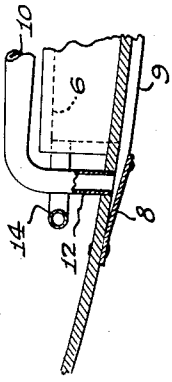


Fig. 5.

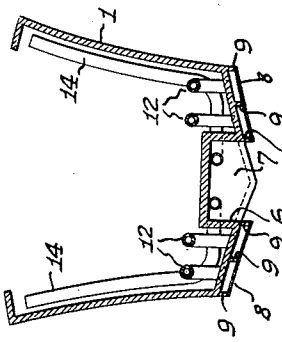


Fig. 4.

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UNITED STATES PATENT OFFICE

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BOAT

Garfield A. Wood, Detroit, Mich.

Application December 24, 1934, Serial No. 759,016

8 Claims. (Cl. 114—67)

This invention relates to power boats of the tractor type and has for its object to provide a speed boat of this type which will be more pleasant for passengers and which will be capable of greater speed without a corresponding increase in power.

More particularly it is the object to provide a hull which will embody a tunnel fore and aft of the bottom thereof and air channels laterally of the tunnel in order to reduce skin friction.

Another object is to provide a tractor propeller in combination with the hull mentioned above and in combination with a weight distribution by which higher speed may be obtained.

Other objects and advantages will become hereinafter more fully apparent as reference is had to the accompanying drawings and wherein my invention is illustrated and in which,

Figure 1 is a side elevation of a power boat built and equipped in accord with this invention;

Fig. 2 is a top plan view of the boat of Fig. 1;

Fig. 3 is a bottom plan view of the boat of Figs. 1 and 2;

Fig. 4 is a vertical cross section taken along the line 4—4 of Fig. 1, and

Fig. 5 is a detail taken vertically along the line 5—5 of Fig. 2.

More particularly 1 indicates a hull having a power plant 2 rearwardly thereof and all seats 3 forwardly of the power plant. A tractor propeller 4 is driven by a shaft 5 extending through the hull and through a tunnel 6.

The hull 1 is provided with a step 7 at the forward end of the tunnel 6 and two further steps 8 laterally and forwardly of the step 7. Extending rearwardly from the steps 8 are ribs 9 forming air channels. Pipe lines 10 fed from blowers 11 divide into branches 12, the branches 12 from one blower having outlets at the forward end of the channels behind one step 8 while the branches 12 from the other blower feed the channels behind the other step 8. Control valves 13, which may be manually or automatically operated are employed to vary the volume of air available to the channels behind one step 8 with respect to that supplied to the other channels and also to vary the total volume delivered according to the wishes of the boat operator.

The tunnel 6 and the air channels produced by ribs 9, while substantially similar in general contour and have the open-bottom characteristic in common, carry the distinctive differences which the two terms have acquired through general usage in the commercial art involving this particular field, viz: the top of the tunnel lies above the normal water line when planing, due to the hull construction itself, while the channel tops, in the absence of delivery of air, will lie below such water line. In other words, the tunnels have a depth dimension materially greater than that of the channels. In the present disclosure this distinction is present. Both types have the step formation at the forward end, so that the pocket-producing effect is present, but while the succeeding action of the water in returning to its level after passing the step would bring the water in contact with the top of the channels, in the absence of the introduction of air, such return within the tunnel does not carry the water surface into contact with the top of the tunnel under normal operating conditions.

In preferred form this invention is applied to a hull of V-shape in cross section as illustrated in Fig. 4. The steps 8 are preferably of the same approximate depth as the height of the ribs 9 as shown in Fig. 5, the ribs being tapered or beveled at their forward ends to extend beneath the steps 8 which are preferably inclined rearwardly.

Vent pipes 14 extending through the transverse member 7 at the forward end of the tunnel assist in breaking the vacuum, and these pipes may be valve controlled and extend well above the surface of the water along the opposite sides of the hull. I have found that a rudder 15 laterally offset from the center-line of the boat functions as desired with this construction and leaves a clear runway in the tunnel.

In my use of the term "power boat" I do not wish to be limited to any particular size or type of boat as I contemplate the application of my invention to all types and classes of boats, vessels and ships having a power plant of any type therein.

What I claim is:—

1. In a power boat, a hull having a step and a tunnel extending rearwardly from said step, a plurality of ribs on the bottom of said hull paralleling said tunnel and forming channels, the depth of the tunnel being materially greater than that of any said channels, means for inletting air to said tunnel adjacent said step, and pressure means for supplying air to said channels.

2. In a power boat, a hull having a step and a tunnel extending rearwardly from said step, a plurality of ribs on the bottom of said hull paralleling said tunnel and forming channels, the depth of the tunnel being materially greater than that of any said channels, means for in-

letting air to said tunnel adjacent said step, a source of pressure air supply, and individual means for supplying air from said source of supply to each of said channels.

3. In a power boat, a hull having a step and a tunnel extending rearwardly from said step, a plurality of ribs on the bottom of said hull paralleling said tunnel and forming channels, the depth of the tunnel being materially greater than that of any said channels, means for inletting air to said tunnel adjacent said step, a source of pressure air supply, individual means for supplying air from said source of air supply to each of said channels, and valvular means for controlling the relative flow of air through said individual means.

4. In a power boat, a hull having a step and a tunnel extending rearwardly from said step, a plurality of ribs on the bottom of said hull paralelling said tunnel and forming channels, the depth of the tunnel being materially greater than that of any said channels, means for inletting air to said tunnel adjacent said step, a separate source of pressure air supply for the channels on each side of said tunnel, and valvular means for varying the flow of air from each of said sources.

5. In a power boat, a hull having a power plant in the rear thereof and passenger seats forwardly of said power plant, a tractor propeller driven by said power plant, said hull having a step and a tunnel extending rearwardly of said step, a plurality of ribs on the bottom of said hull paralleling said tunnel and forming air channels, the depth of the tunnel being materially greater than that of any said channels, means for inletting air to said tunnel adjacent said step and means for directing air under pressure into said channels.

6. In a power boat, a stepped hull having a tunnel extending rearwardly of said step, ribs paralleling said tunnel forming channels, the depth of the tunnel being materially greater than that of any said channels, and means for supplying air under pressure to said channels, in combination with a tractor propeller and power plant means for driving said propeller.

7. In a power boat having a power plant in the rear thereof and a tractor propeller driven by said power plant, a stepped hull having a tunnel extending rearwardly from the step, a plurality of ribs laterally of said tunnel forming air channels on the bottom of the hull, the depth of the tunnel being materially greater than that of any of the channels, means for inletting air to said tunnel at said step, and pressure means for supplying air to said channels.

8. In a power boat, a hull having a step centrally of the width thereof and a tunnel extending rearwardly therefrom, further steps on each side of the first named step, ribs extending from each of said further steps along the bottom of said hull parallel to the sides of said tunnel forming channels, the depth of the tunnel being materially greater than that of any said channels, two sources of pressure air supply, a main pipe line leading from each of said sources and dividing into branches, the branches from one of said sources having outlets at the channels behind one of said further steps, the branches from the other of said sources having outlets at the channels behind the other of said further steps, and means for inletting air behind said first named step.

GARFIELD A. WOOD.