

May 21, 1940.

V. B. EDWARDS

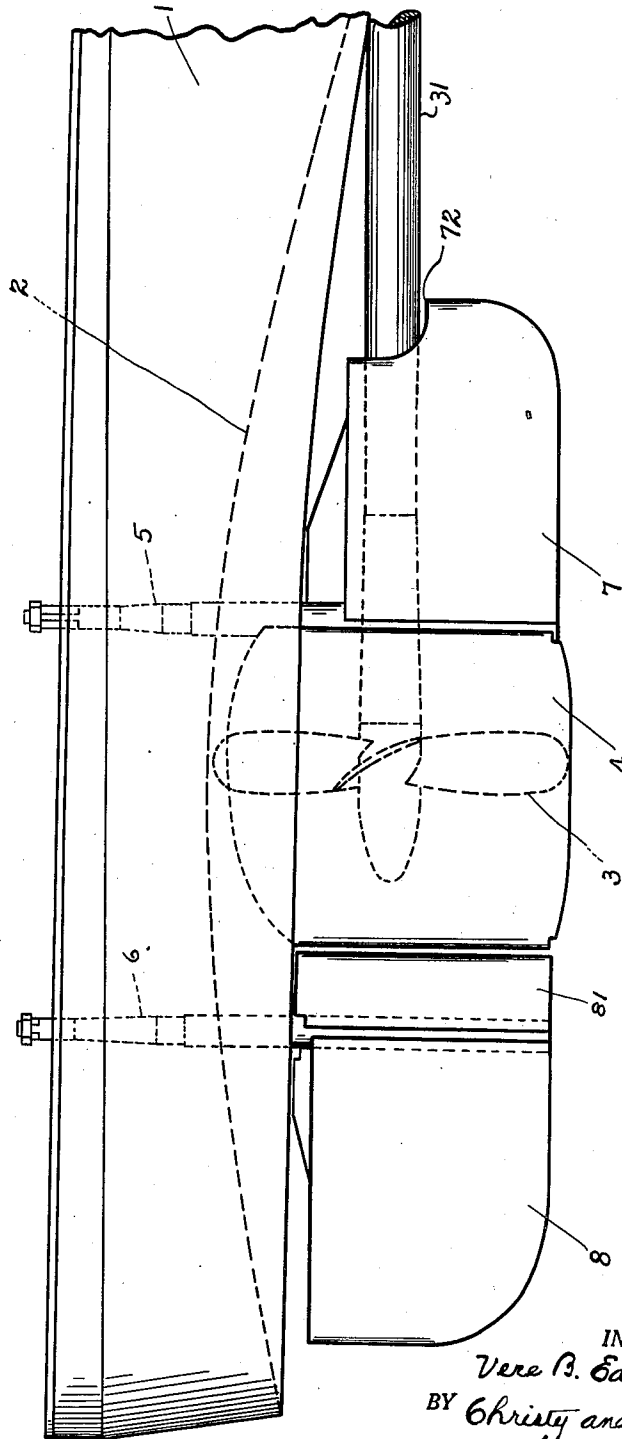
2,201,859

BOAT

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2 Sheets-Sheet 1

Fig. 1.



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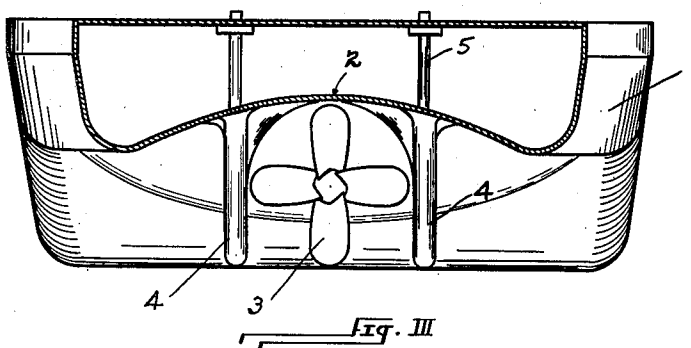
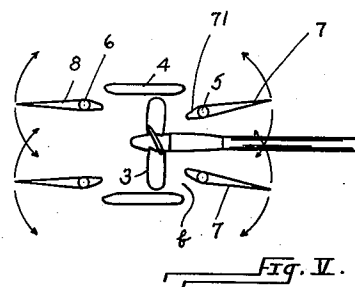
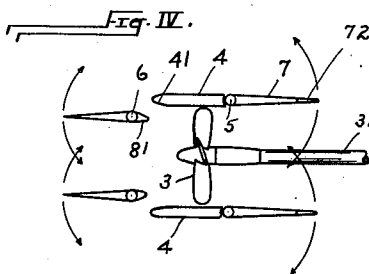
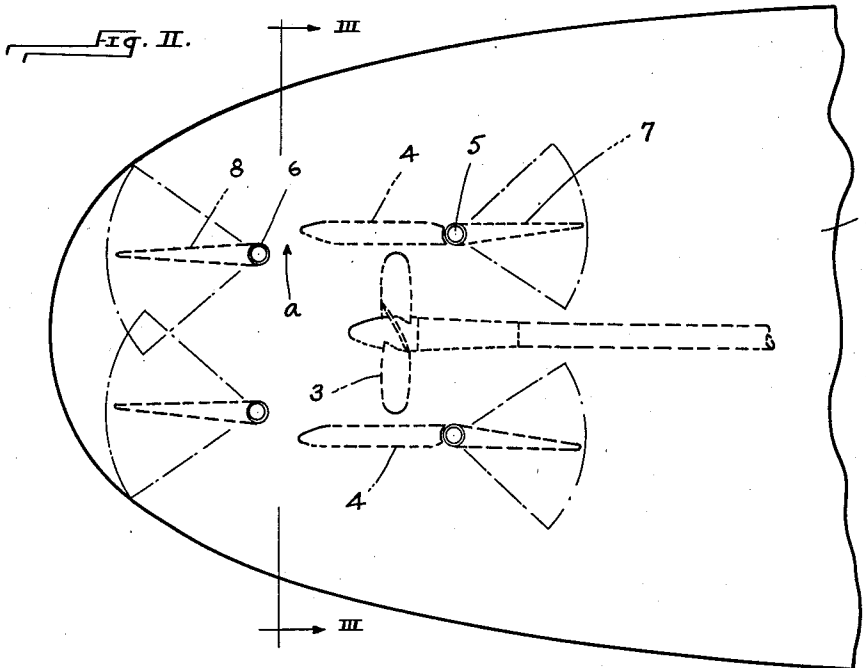
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UNITED STATES PATENT OFFICE

2,201,859

BOAT

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Application February 12, 1938, Serial No. 190,244

1 Claim. (Cl. 114—163)

This invention relates to boats. In Letters Patent of the United States No. 2,011,618, granted August 20, 1935, on the application of Albert J. Dawson, the inventor has described a boat of tunnel type in which skegs are provided, arranged in flanking positions with respect to the propeller that drives the boat, and in which rudder elements are organized with the skegs. This invention is found in improvements upon the structure of this Dawson patent.

In the accompanying drawings Fig. I is a fragmentary view, showing in side elevation the stern portion of a boat of tunnel type, equipped with the skeg and rudder arrangement of my present invention; Fig. II is a view of the same portion of the boat, viewed in plan from above and drawn to smaller scale; Fig. III is a view in vertical and transverse section, on the plane indicated at III—III, Fig. II; Figs. IV and V are analytical views in plan and to yet smaller scale, showing particularly the assembly of propeller, skegs, and rudders, and illustrating certain modifications.

The hull 1 of the boat is shaped at the stern with a tunnel whose peak is indicated at 2 (Figs. I and III), and within this tunnel the propeller 3 is assembled, to rotate in usual manner. Twin skegs 4 extend forward and aft, and downward from the hull on either side of the propeller (when the propeller is in position), and constitute downward extensions of the tunnel walls. These skegs, so situated, serve to deflect downwardly and to a level lower than that in which the rudders swing, the streams of water directed against their faces by the rotating propeller. The skegs, together with the arch of the tunnel, constitute a shrouding that surrounds the rotating propeller on all sides, save below; and, in consequence, the transverse thrust of the rotating race of the propeller is turned, and directed downward, and the rudders are in their operation relieved of a disturbing influence.

The skegs 4 at their fore and aft edges stand free of the hull. As shown in Figs. I, II, and IV the stocks 5 of the forward rudder blades 7 are mounted at the forward edges of the skegs 4. The stocks 6 of the after rudder blades 8 are mounted, not at the after edges of the skegs, as in the arrangement of the Dawson patent named above, but at an interval aft from and preferably also at an interval abeam and inward from the skeg edges. This arrangement is clearly seen in Figs. II, IV, and V. The rudder parts are duplicated on the two sides of the boat, and the two pairs of rudder blades are mounted to swing in unison, in response to the tiller—the forward

pair in unison to starboard or port and the after pair simultaneously and oppositely to port or starboard.

In consequence of such positions of the stocks 6 and rudder blades 8, passageways *a* are opened between the after edges of the skegs and the forward edges of the rudders. Through these passageways water streams. The effects are that, without appreciable loss of speed forward, the backing power of the boat is substantially increased, and the moving boat is more immediately and completely responsive to the tiller.

Certain refinements of shape that make for increased efficiency are indicated. The skegs may be tapered rearwardly, so that the space between them widens as indicated at 41, and the edges may be rounded. Correspondingly, the after rudders may be formed with noses 81 that extend forward, beyond posts 6. The rudder blades, then, turn upon centres that are intermediate in position in the length of the blade. These forward-extending noses 81 of the blades may be tapered to rounded edges, and the taper here, instead of being a tapering of the inner surfaces (as is true of the skegs) is a tapering of the outer surfaces. In consequence of this elaboration and refinement in shape, the passageways *a* widen and narrow more rapidly and through a wider range as the rudders swing, and the good effect is heightened. The after rudders, then, are advantageously of air-foil outline in horizontal plan, as seen in Fig. IV. The inner faces of these rudder blades are plane; the outer, convex. From the rounded forward nose the outer surface extends obliquely outward, at a relatively steep angle, to a maximum, and then obliquely inward at a relatively gentle angle to the fin-like after edge of the blade. Fig. II serves to indicate that forward-extending noses upon the after rudder blades are not an essential feature. The entire blade may extend from the post rearwardly. Advantageously, it tapers to the after edge.

The posts 5 that carry the forward rudder blades 7 may, as has been said, stand pivotally mounted at the forward edges of the skegs 4. Such an arrangement is shown in Figs. I, II, and IV. Alternatively, as indicated in Fig. V, the posts 5 may be spaced from the forward edges of the skegs at intervals forwardly and preferably also at intervals abeam and inward from the skeg edges. In such case passageways *b* are opened between the skegs and the forward rudder blades and the water streams to the propeller from a wider region of approach. Fig. V serves to show

that, additionally, the pair of forward rudders 7 may be set in coordinated positions of normal divergence, thus offering minimum impedance to the stream of water in approach to the propeller.

- 5 It has not been found important to set the rear rudder blades at a correspondingly divergent angle; manifestly, however, such a setting is possible, if in any case it be found advantageous.

- 10 The forward rudder blades being so spaced from the skegs, they may, if desired, be provided with tapered noses 71, of complementary shape to those of the rear rudder blades, already described. Figs. I and IV show the forward rudder blades to be cut away at 72, to give clearance, and
15 to permit free swinging without interference with the propeller shaft 31.

It is manifest that either the forward or the after pair of rudder blades alone will afford

steerage, and that the correlative pair may be omitted. Preferably, however, both are provided, serving in coordination the common end.

I claim as my invention:

In a boat of tunnel type provided with twin 5 skegs constituting downward extensions of the tunnel walls, and with a propeller arranged within the tunnel and in the space between the skegs, the combination of two rudder blades symmetrically placed on opposite sides of the tunnel and 10 marginally situated with respect to the stream of water impelled by the rotating propeller, the said blades being mounted upon centres of turning spaced at intervals forward from the forward edges of said skegs, the said rudder blades diverging 15 relatively to one another outwardly and forwardly.

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