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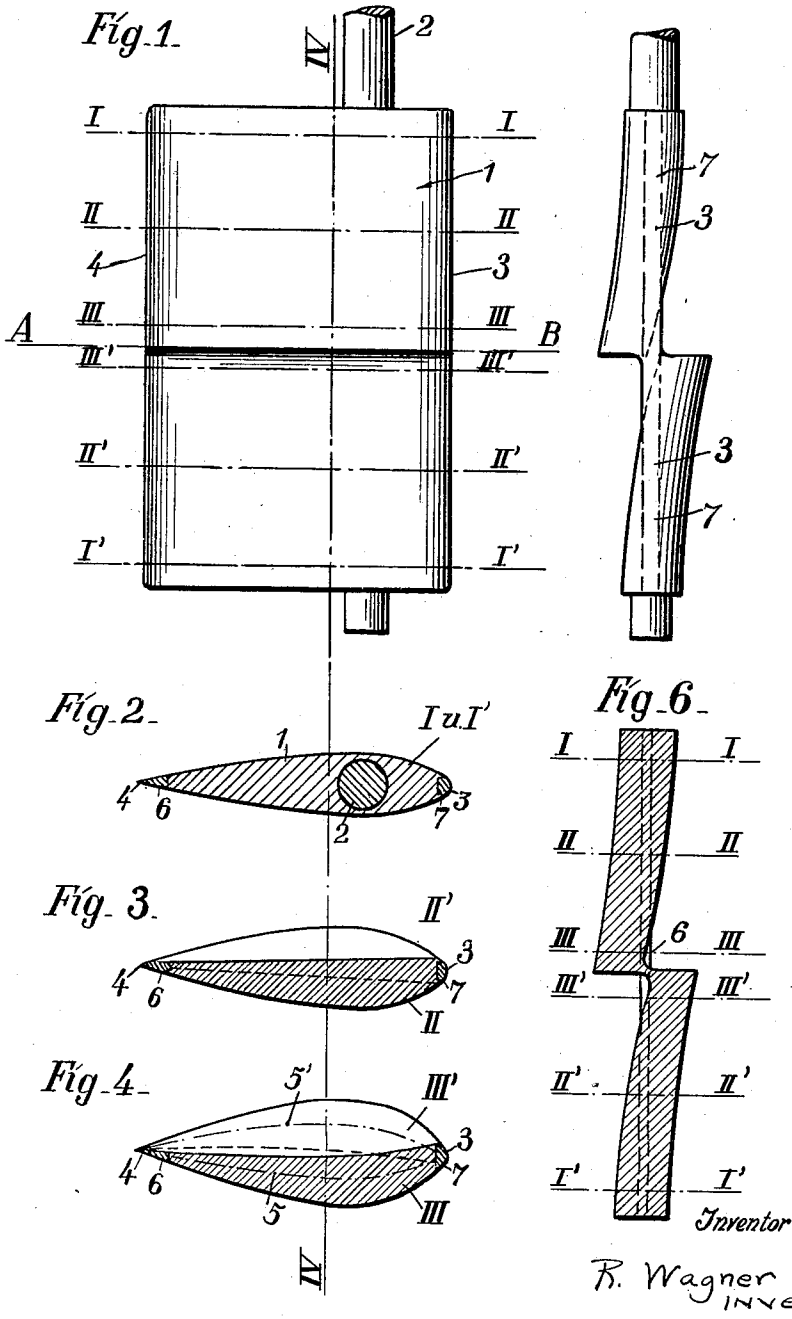
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RUDDER

Filed July 17, 1930

Fig. 5.



UNITED STATES PATENT OFFICE

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RUDDER

Application filed July 17, 1930, Serial No. 468,695, and in Germany January 27, 1928.

The present invention relates to a rudder with guide surfaces, which will be particularly simple to manufacture and particularly satisfactory in operation, the rudder being unsymmetrically constructed in cross section above and below the axis of the shaft in a known manner for the purpose of utilizing the twist of the screw race. The invention consists in the fact that notwithstanding this unsymmetrical construction both the rear edge and the front edge of the rudder are located exactly or approximately in the central plane of the ship, whether the rudder is made in one piece, that is to say, as a balanced rudder, or in two parts, that is to say, consisting of a stationary front part and of a movable part attached thereto. In the guide-surface rudders hitherto known or suggested there existed in this respect, partly in the case of the leading edge and partly in the case of the trailing edge, a comparatively marked relative swerving of the edges of the upper and lower guide-surface members, as a result of which, particularly of course at the front end of the rudder, an unfavourable engaging and tangential deflection of the core current, which, as is known, possesses the maximum amount of rotational energy and is therefore the most advantageous to utilize, was involved.

By the present invention this advantage is obviated owing to the fact that the leading edges are exactly or approximately in the vertical central plane of the ship, and therefore the entering jet is gripped exactly in a central plane. The same remark applies to the rear edge of the rudder, as a result of which the propeller currents flowing above and below the centre of the shaft unite behind the rudder without constraint and without eddying.

As compared with a construction in which the trailing end of the rudder exhibits relative swerving in the centre there is also a structural advantage, which moreover also

applies to the leading edge, in that the sheathing of the rudder, or an intervening rudder frame, can extend from top to bottom without swerving.

The invention is illustrated for the case of a balanced rudder in the accompanying drawings, in which

Figure 1 is a side view, and

Figures 2, 3 and 4 are cross sections taken at various distances from the shaft axis.

Figure 5 is a front view of the rudder, and

Figure 6 a sectional elevation of the rudder on the line IV—IV in Fig. 1, as seen from the front.

The line A—B denotes the shaft axis, 1 the rudder, 2 the rudder spindle, 3 the front or leading edge of the rudder, and 4 the rear or trailing edge. According to the invention these two edges, both front and rear, are exactly or approximately in the central plane of the ship, and the opposite curvatures of the parts of the rudder only affect the intervening part.

In Figure 3, which is a section on the line III and III', the curved operative centre lines 5 and 5' of the profile are also shown, these centre lines coinciding at the front and rear, 6 and 7 denote the rudder frame, which is inserted in the front and rear ends of the rudder.

Similarly the invention may also be constructed as a two-part rudder body, consisting of a stationary front portion and of a movable portion connected therewith.

What I claim is:—

1. A guide-surface rudder, consisting of a front edge substantially in the midship plane, a rear edge likewise substantially in the midship plane, an upper rudder body portion extending between the said front and rear edges curved out to one side above the axis of the shaft, and a lower rudder body portion curved out to the other side underneath the axis of the shaft.

2. A guide-surface rudder, consisting of a

frame member at the front edge of the rudder substantially in the midship plane, a frame member at the rear edge of the rudder likewise substantially in the midship plane, and
5 plating secured to the said frame members and forming on the hand a rudder body portion curved out to one side above the axis of the shaft and on the other hand a rudder body portion curved out to the other side under-
10 neath the axis of the shaft.

In testimony whereof I have signed my name to this specification.

RUDOLF WAGNER.

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