

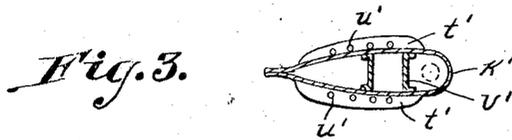
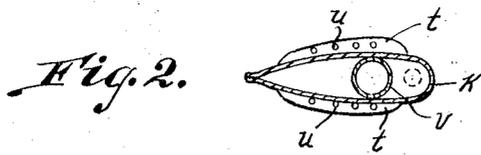
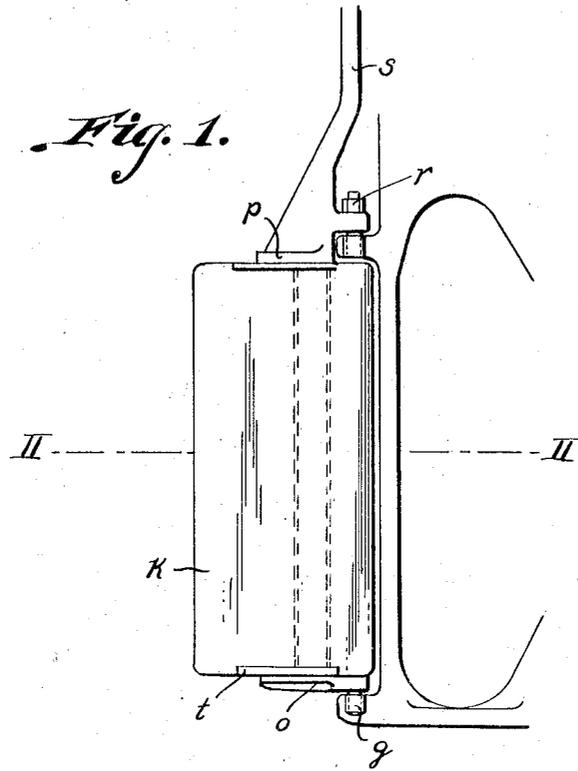
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SHIP'S RUDDER

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UNITED STATES PATENT OFFICE

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SHIP'S RUDDER

Original application filed March 26, 1928, Serial No. 264,617, and in Germany September 11, 1926.
Divided and this application filed June 17, 1929. Serial No. 371,454.

The present invention is a division of my copending application Ser. No. 264,617, filed Mar. 26, 1928.

The invention relates to a rudder suspended by means of flanges on the ship and the characteristic feature of the invention resides in the fact that the rudder blade is connected at its upper and lower edges by horizontal coupling flanges to the rudder carrying flanges. It is known to connect rudders of ships by flanges on the rudder post or when the axis of rotation of the rudder coincides with the axis of the rudder post to also rotatably mount the rudder by means of collared bearings on the rudder post. With regard to rudders of the first named type, the removal of the rudder is inconvenient, because it is necessary to lift the rudder to the extent of the length of the flanges and also to lift the rudder spindle mounted in the steering engine. Rudders with axis of rotation located in the rudder post can as a rule only be provided in new structures of ships.

With regard to the rudder structure according to the present invention, merely the uppermost and lowermost rudder carrying flanges have been retained while the rudder blade which is coupled between these two flanges, may be constructed as a plate or cut-water displacement rudder, and connected to the rudder carrying flanges by means of releasable rudder coupling flanges. Owing to the arrangement of special rudder carrying flanges above and below the rudder blade, a removal of the latter is rendered possible without the necessity of lifting the rudder spindle or removing the spindles or carrying flanges.

In order that the bearing, which is restricted by the construction to two rudder carrying flanges, may be relieved as much as possible, the rudder is preferably welded in all parts thereof and constructed as a displacement rudder. In order that the forces which are exerted by the torque on the rudder may be positively taken up, the rudder body, which is welded throughout, is strengthened in the interior by a profile body, for instance, a tube or a body of T-cross section.

Three constructional forms of the invention are shown in the accompanying drawing by way of example.

Figure 1 shows the rudder in elevation, and

Figure 2 is a sectional plan according to the section line II—II of Fig. 1, while

Figures 3 and 4 are similar views of slightly modified arrangements.

Referring more particularly to the drawing there is provided a rudder comprising plates and sections or profiles welded together. *v* is the profile body adapted for strengthening the rudder body and *o* is the lower rudder carrying flange and *p* the upper rudder carrying flange. The guiding pintle *r* is connected to the upper rudder carrying flange *p* and *q* is the rudder carrying flange connected to the lower rudder carrying flange *o*. The torque exerted by the steering means is transmitted by the rudder spindle *s*, taken up by the profile body *v* and transmitted to the rudder blade *k* welded to the latter.

The rudder blade is united by means of its upper and lower coupling flanges to the rudder carrying flanges *p* and *o*.

According to Figs. 2, 3 and 4, *t*, *t*¹ and *t*² are the upper and lower rudder coupling flanges for uniting either of the respective rudder blades *k*, *k*¹ and *k*² with the rudder carrying flanges. The flanges are united by screws *u*, *u*¹ and *u*². The profile body in the interior of the rudder is shown as a tube *v* in Figure 2 and as a double channel or U-girder *v*¹ in Figure 3 and as double T-girder *v*² in Figure 4.

It is believed in view of the foregoing description that a further detailed description is entirely unnecessary. Likewise it is believed that the advantages of the invention will be readily apparent.

Having thus fully described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. A ship's rudder including in combination spaced guiding and carrying members mounted on a ship, a rudder body and flanges at the upper and lower ends of the rudder body arranged parallel with and de-

tachably connected to the guiding and carrying members.

2. A ship's rudder including in combination, rudder carrying flanges mounted in spaced parallel relation on a ship, a welded rudder body of rolled material, horizontal coupling flanges at the upper and lower edges of the rudder body detachably connected to the rudder carrying flanges in such manner that the body may be removed horizontally upon the disconnecting of the coupling flanges without disturbing the carrying flanges.

3. A ship's rudder including in combination upper and lower rudder carrying flanges mounted to swing in a horizontal plane on a ship, a hollow rudder body completely closed and of cut water shape, coupling flanges carried with the upper and lower edges of the rudder body and arranged parallel to each other and to the rudder carrying flanges and detachably connected to the latter so as to be readily movable therefrom, substantially as and for the purposes set forth.

In testimony whereof I affix my signature.
Dr. WILLIAM SCHOLZ.

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