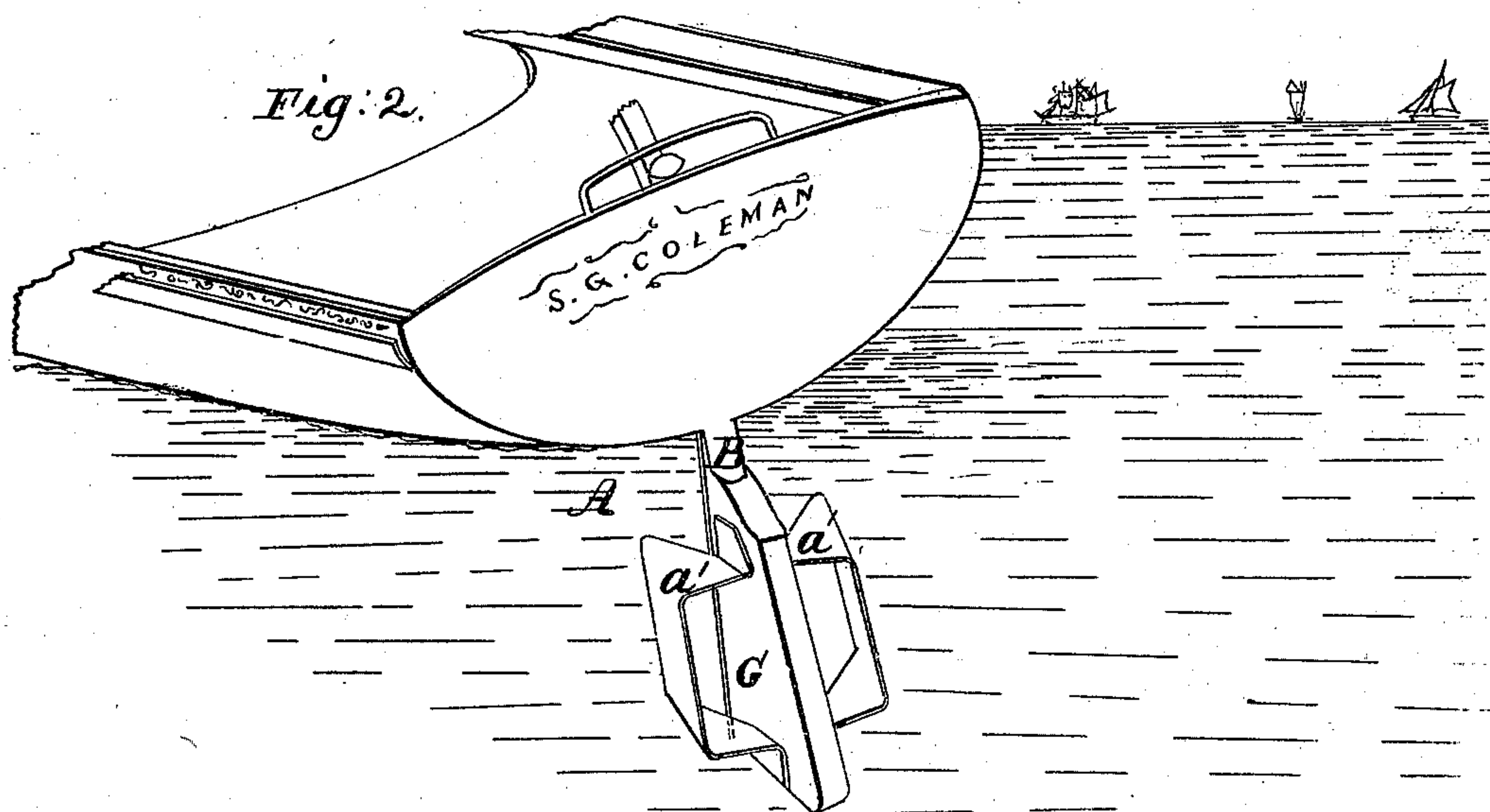
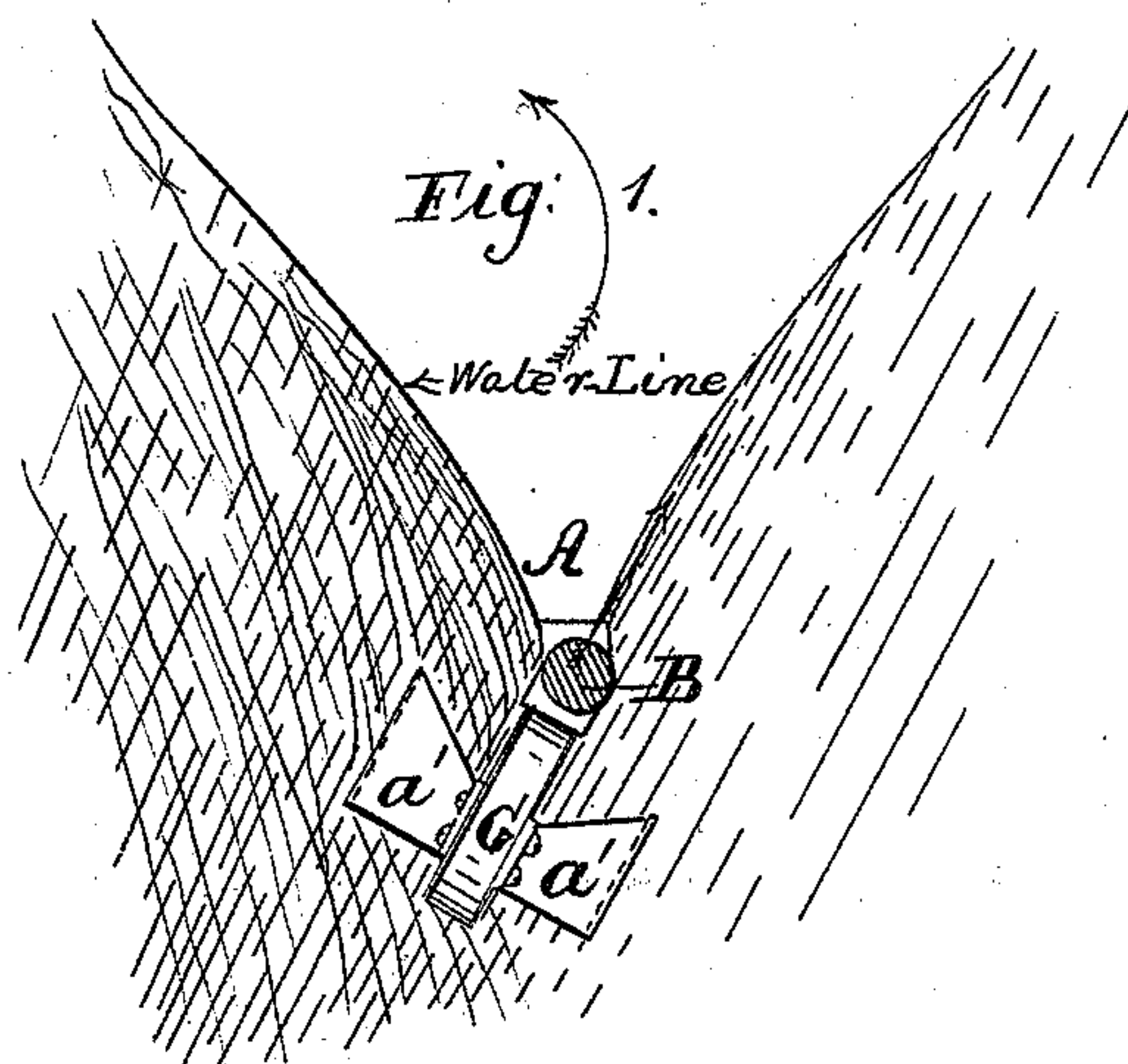


S. G. Coleman.

Steering.

N^o 99,639.

Patented Feb. 8, 1870.



Witnesses;
W. H. Coleman,
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STEPHEN G. COLEMAN, OF PROVIDENCE, RHODE ISLAND.

Letters Patent No. 99,639, dated February 8, 1870.

IMPROVEMENT IN RUDDERS FOR VESSELS.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, STEPHEN G. COLEMAN, of the city and county of Providence, State of Rhode Island, have invented a new and improved Method of Steering Vessels, by attaching wings to an ordinary rudder, or by constructing a rudder composed of more than one blade; I hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 1 is a longitudinal sectional view of the stern of a vessel, A, with an ordinary rudder, having wings *a' a'* attached thereto. B represents the rudder-post, and C, the blade of the rudder.

Figure 2 is an ordinary view of the same thing.

Like letters designate like parts.

In order to understand the nature and effect of this invention, the usual operation of steering a vessel should first be described.

Suppose a vessel, A, fig. 1, to be in motion, and it is desired to change her course. This is effected by turning the rudder-blade C, ordinarily used on vessels, to the position shown in the figure, which causes the vessel to describe, while moving forward after the position of the rudder-blade has been so changed, a curved line, similar to that indicated by the curved arrow in fig. 1. This results because of the opposing pressure of the water on the inner side of the rudder-blade, *i. e.*, the side opposite the letter B, fig. 1, and the forward motion of the vessel through the water.

It will be observed, that in the common style of rudder, no steerage-power whatever is developed in such a case on the outer side of the rudder-blade, *i. e.*, the side upon which the letter B is located in the drawing, fig. 1.

Having confined the above operation and explanation to the ordinary form of rudder, let us now suppose that wings of suitable form, such as *a' a'*, be prop-

erly attached and stayed to the rudder-blade C, and the vessel afterwards put through a similar change of course. In this case, not only does the forward motion of the vessel bring the opposing force of the water to bear with greater effect, and increased leverage, over that exerted on the blade alone, by acting in opposition to the inner wing of the rudder-blade, but in addition, the opposite or outer wing, attached to the rudder-blade, plays an entirely new and most important part, namely, that of catching within its grasp a powerful stream of dense water, and forcing the same between the rudder-blade and the wing, acting in fact like a duplicate rudder moving in concert with the principal rudder, both wings together greatly increasing the steerage-power over the vessel, causing her to turn much quicker, and in smaller space—advantages of the highest importance. From the fact that these wings extend further sideways from the stern into more dense water than can, from the nature of the case, exist near the ordinary rudder-blade of a moving vessel, changing her course, vessels of full runs can be steered with greater accuracy than at present.

Like results as the foregoing will follow from a rudder constructed as shown in fig. 3, where the ordinary rudder-blade is omitted entirely, and the wings are attached to a rudder-post only. I regard the former as the most convenient for the alteration of existing rudders, the second perhaps as the best for building new rudders.

What I therefore claim as my invention, and desire to secure by Letters Patent, is—

Additional wings or blades *a' a'*, attached to an ordinary rudder or rudder-post, substantially as described.

STEPHEN G. COLEMAN.

Witnesses:

EDM. F. BROWN,

W. H. COLEMAN.