S. D. TILLMAN.

PROPELLING VESSELS.

No. 104,512. Patented June 21, 1870.

Fig. 1.

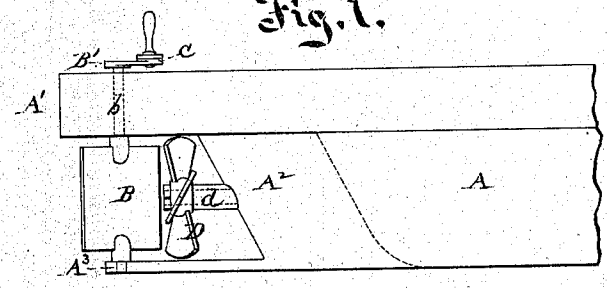


Fig. 2.

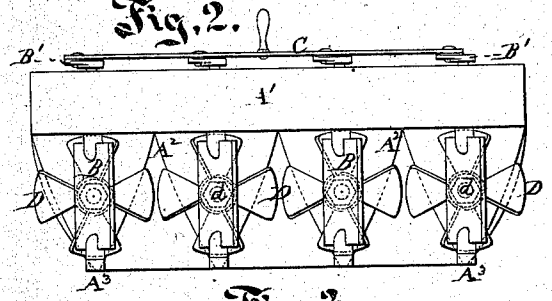
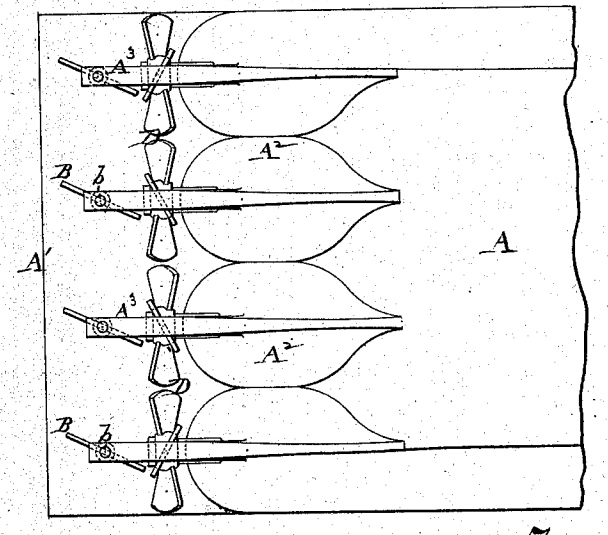


Fig. 3.



Witnesses,

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United States Patent Office.

SAMUEL D. TILLMAN, OF JERSEY CITY, NEW JERSEY.

Letters Patent No. 104,512, *dated June* 21, 1870.

IMPROVEMENT IN PROPELLING 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, SAMUEL D. TILLMAN, of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Propelling Vessels; and I do hereby declare that the following is a full and exact description thereof.

My invention relates to the construction of the vessel at the rear, and the construction and arrangement of the propelling and steering means. I render available, as propelling-surface, the whole breadth of the immersed section. I use screw-propellers, arranged side by side.

Many curious experiments have been made in modifying the construction and arrangement of these parts, none of which have, as yet, succeeded in accomplishing the ends which I seek to attain.

I will first proceed to describe what I consider the best means of carrying out my invention, with some suggestions for modifications, and will afterward designate the point which I claim as new.

The accompanying drawing forms a part of this specification.

Figure 1 is a side elevation, showing the entire rear portion of the vessel.

Figure 2 is a stem view, and

Figure 3 is a view of the same parts from below.

Similar letters of reference indicate like parts in all the figures.

A^1 is an overhanging portion of the stern.

A^2 A^2, &c., are runs or extensions rearward from the main body of the hull, which latter is represented by A, and

A^3 are extensions of the keel, adapted to support the lower end of the rudder.

B B, &c., are balanced rudders, hung on vertical shafts *b*, provided with short levers B^1 at their upper ends, which levers are connected together by a rod, C, which is operated by hand, or by machinery, to turn the rudders B all simultaneously, and to a uniform extent.

I employ four screw-propellers D D D D, fixed on shafts *d d*, extending through suitable supports and stuffing-boxes in the rear of the runs A^2. These screws are, alternately, right-handed and left-handed, and their shafts are correspondingly turned, in opposite directions, by one or more engines, not represented, working, in any ordinary or suitable manner, in the interior of the vessel.

The runs A^2 are here represented as made with their after surfaces rounded, and their junction with the main body A of the hull is inclined.

For vessels of greater speed these runs may be brought to a thin vertical edge, except at the part through which the propeller-shaft projects.

I do not limit myself to these precise constructions. I work my improved propelling and steering means quite efficiently behind a scow, having a body inclined upward about like the dotted line in fig. 1, yet less abruptly, which represents the rear boundary of the main body or hull A, without the runs or extensions rearward, indicated by A^2. I should, in such case, however, mount the propellers nearer the main body A.

I prefer the rearward extensions A^2, which give greater buoyancy to the boat, having ample spaces between them, as represented, in which the water may freely rise from below to fill the space, which tends to form behind the vessel.

The balanced rudders B are, in practice, sharpened both at the front and rear edges, and, being placed as represented, one opposite or in line with each propeller, connected together as represented, the steering is performed with more effect than in any ordinary arrangement, where many screws are employed.

It is obvious that, by combining a series of balanced rudders, the steering apparatus need not project so far as when a single rudder is used, and the parts can be made stronger in proportion; besides, the failure of a single rudder would not disable the boat.

It will be observed that my arrangement provides an absolutely clear space quite across the stern of the vessel, which allows the several screw-propellers to act efficiently on all the water across the entire breadth of the stern. No part of the space is occupied by any stern-post, or other obstruction.

The screws may have any number of plates desired, and, by properly gearing or connecting the shafts within the vessel, so as to determine their positions with absolute certainty, and mounting the screws so that the blades of one may correspond in position with the spaces in the next, I can allow the areas swept by the several propellers to lap upon each other to a considerable extent. Such a proportioning would give a greater propelling surface, which, for slow vessels, would more than compensate for the increased friction.

Fast vessels, on the contrary, might have the screws reduced in diameter, so that the extreme periphery described by one should not quite touch the extreme periphery described by the adjacent propellers.

I do not claim mounting two or any other number of propellers on each side of the stern-post or deadwood.

My arrangement, it will be observed, extends the series of propellers, in a continuous line, quite across the stern, without interruption by the interposition of a stern-post, or any other object.

I claim—

The series of propellers D, arranged, as represented,

relatively to each other and to the hull of the vessel, the propellers filling the entire space, and acting on the water across the whole breadth of the vessel, in combination with any suitable steering means, and provision for allowing the access of the water to the propellers in the entire series, substantially as specified.

Also, the series of balanced rudders B B, when operated simultaneously, as shown, and arranged each in the rear of a separate propeller, D D, and stern-post A^2 A^2, as and for the purpose herein set forth and described.

In testimony whereof I have hereunto set my name in presence of two subscribing witnesses.

SAML. D. TILLMAN.

Witnesses:

W. C. DEY,

H. E. PRICE.