(No Model.)

D. BRUCE, Jr.

SHIP.

No. 450,350. Patented Apr. 14, 1891.

Fig. 1.

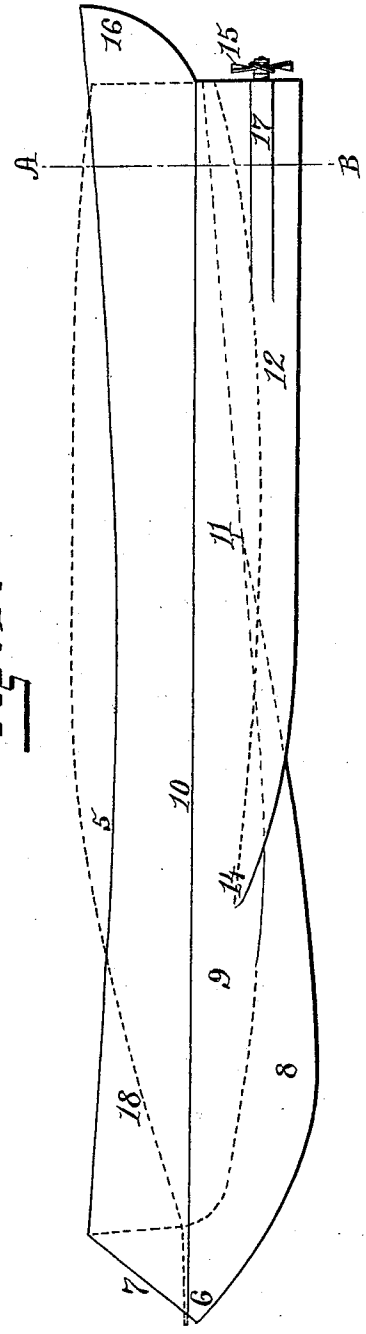


Fig. 3.

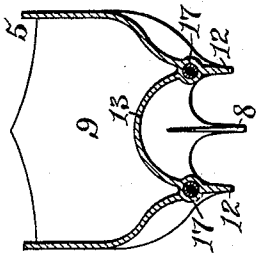
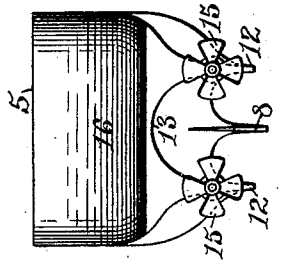


Fig. 2.



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SPECIFICATION forming part of Letters Patent No. 450,350, dated April 14, 1891.

Application filed September 9, 1890. Serial No. 364,457. (No model.)

To all whom it may concern:

Be it known that I, DANIEL BRUCE, Jr., of the city of Providence, county of Providence, and State of Rhode Island, have invented a new and useful Improvement in Ships; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to an improvement in the construction of twin-screw-propelled vessels. The invention is also applicable to sailing or other ships or vessels.

The invention consists in the peculiar and novel construction of the hull of the vessel by which a keel is formed in the stem or forward part of the vessel and two keels are formed in the stern or rear part of the vessel, as will be more fully set forth hereinafter.

The object of the invention is to secure a better support for the propellers in a twin-screw-propeller ship.

Another object of the invention is to secure greater stability in the ship, and another object of the invention is to secure greater speed in a twin-screw ship.

Figure 1 is a side view of my improved ship, the horizontal section on the load-line being indicated in broken lines, as is also the line of the bottom between the two keels. Fig. 2 is a stern view of the ship, and Fig. 3 is a vertical cross-section on the line A B of Fig. 1.

In the drawings, the number 5 indicates the deck-line of the ship; 6, the cut-water; 7, the upward and backward sheer of the cut-water; 8, the stem-keel. This keel is an extension of the cut-water and extends farthest below the hull 9 and below the load-line 10 forward of the waist at a point about one-fifth the length of the ship from the extreme forward end of the cut-water 6. From this point the stem-keel inclines upward and intersects the bottom of the hull proper at the point 11, being at or about six-tenths of the length of the ship from the extreme forward end of the cut-water.

The number 12 indicates two keels placed one on each side of the center of the vessel and connected by the arched bottom 13. These keels extend forward and by a gradual upward curve intersect the bottom of the hull 9 at the point marked 14, which point is forward of the stability or largest cross-section of the vessel, and extend rearward to the propellers 15 at the intersection of the overhanging stern 16 with the load-line 10, at which point the keels 12 extend farthest below the bottom of the hull 9 and below the load-line 10. The tubes 17, which form the support of the propeller-shafts, are secured in the keels 12, thus forming a rigid support for the propellers.

It will be seen on examining Fig. 1, in connection with the broken line 18, indicating the cross-section on the load-line, that the greatest displacement and consequently the stability of the vessel is to the rear of the point 14, at which point the keels 12 commence, and that the bottom of the vessel gradually approaches the load-line. The vessel, therefore, in passing through the water will divide the water by the cut-water 6 and keel 8, and the water, following the keel 8 and the bottom, will enter between the two keels from below and this water will leave the vessel with the least possible drag. The two keels 12, in connection with the stem-keel 8, will hold the vessel against sliding laterally in a high wind and, owing to their own displacement and stability, diminish the rolling of the vessel. When this vessel is provided with the twin screw-propellers 15, the propeller-blade will have a firm thrust on the water, as the water flowing in from the sides is met with the water flowing under the bottom between the two keels and supplied to the two propellers equally, thus securing higher speed by diminishing the slip of the propellers.

The keel 8 and the keels 12 overlap, so that at or about midship the keel 8 extends forward and rearward and the two keels 12 forward and rearward. As these keels form substantial girders, the vessel is considerably strengthened midship, a point where in rough weather the strength of a vessel is most severely tried.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a vessel, the combination, with the hull proper, of a cut-water and keel extending forward of and below the hull, gradually diminishing in depth and intersecting the bottom

at a point rearward of the center of the length of the vessel, and two keels extending longitudinally on each side of the center of the vessel and diminishing in depth and in the hull at points forward of the center of the length of the vessel, as described.

2. In combination with the hull of a ship and the central keel projecting below the hull, the keels 12, extending on each side of and parallel with the center of the ship from a point forward of the center of the ship and increasing in depth toward the stern, and the tubes 17, adapted to support the twin screw-propellers and their shafts, as described.

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