

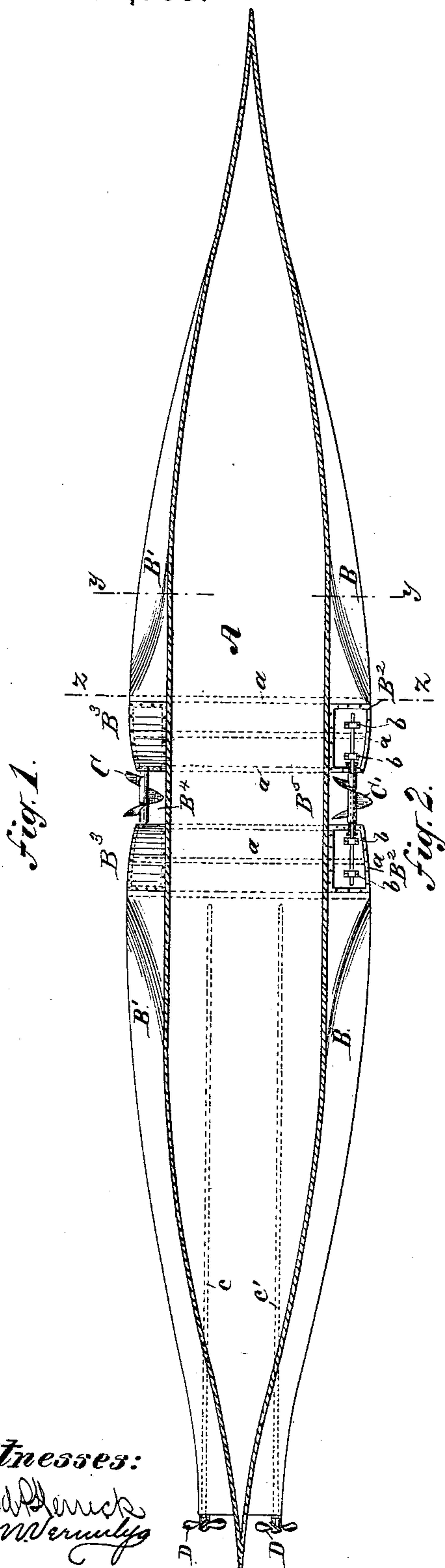
(No Model.)

E. H. HALL.

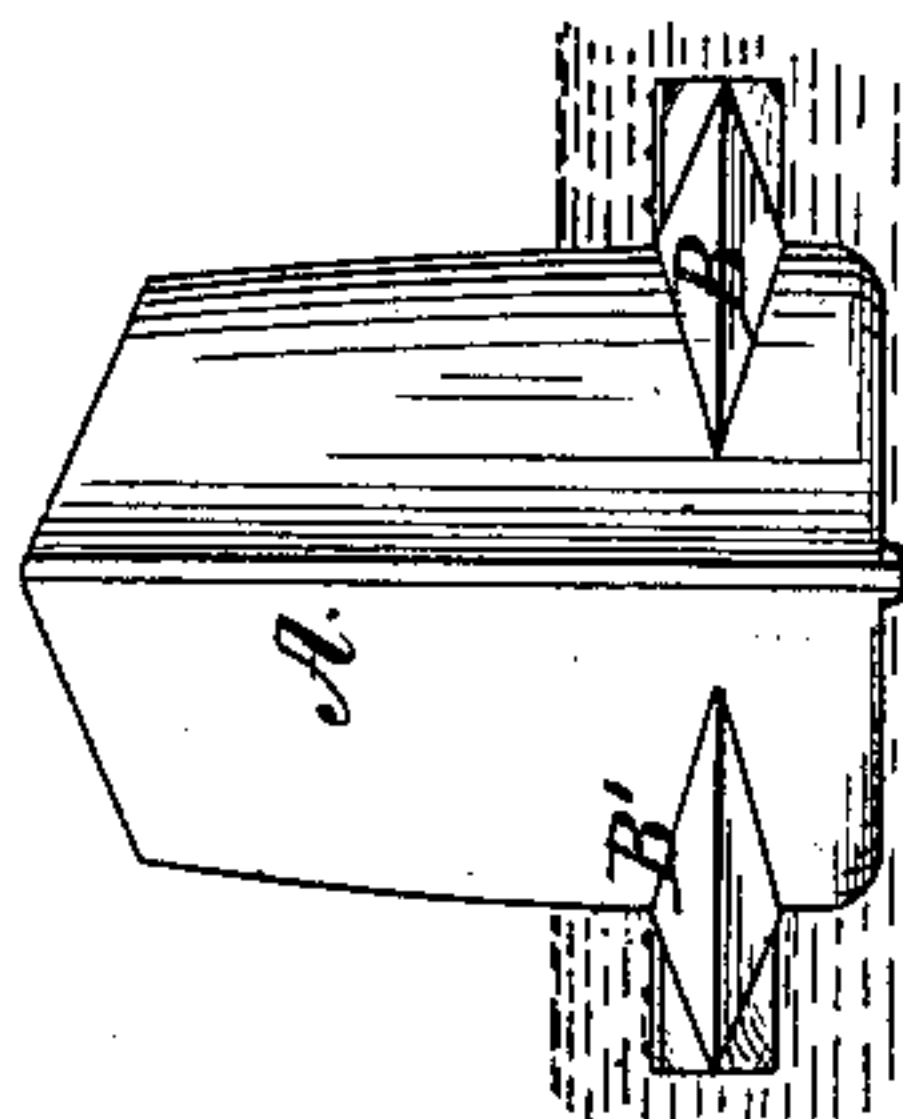
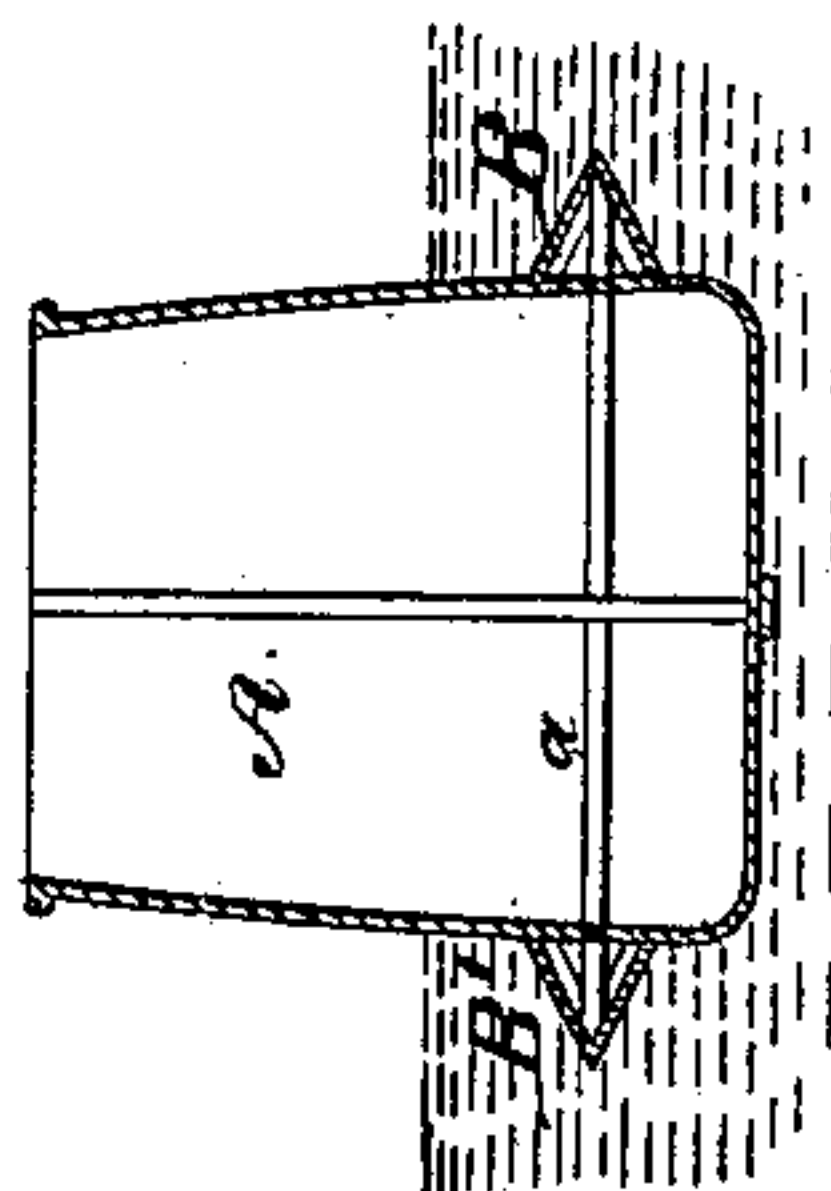
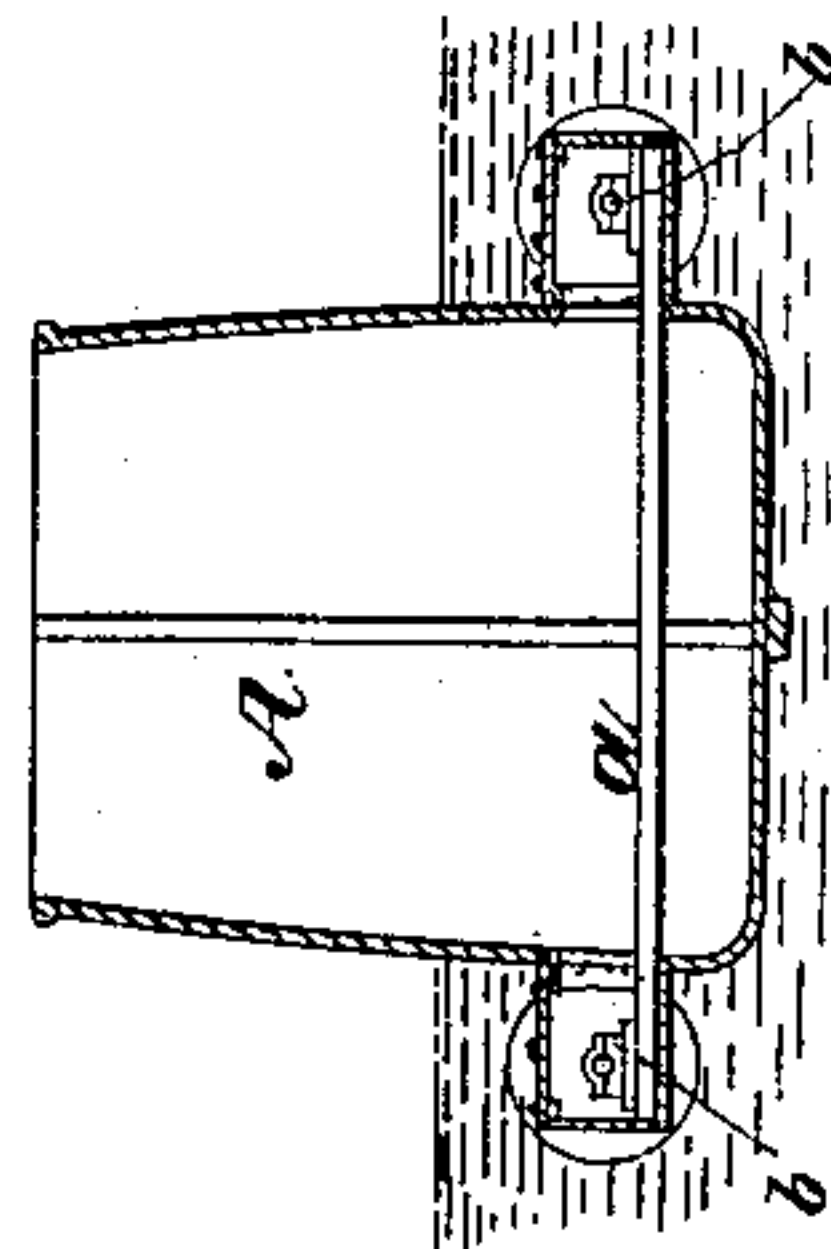
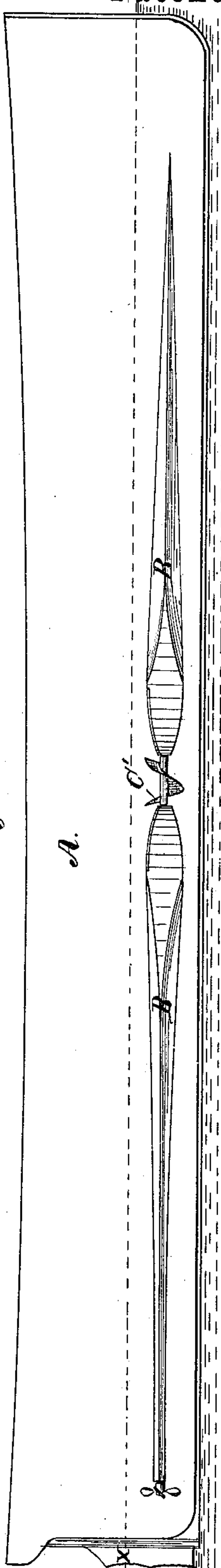
SCREW PROPELLING APPARATUS FOR STEAM VESSELS.

No. 332,709.

Patented Dec. 22, 1885.



A.



Inventor

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UNITED STATES PATENT OFFICE.

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SCREW-PROPELLING APPARATUS FOR STEAM-VESSELS.

SPECIFICATION forming part of Letters Patent No. 332,709, dated December 22, 1885.

Application filed October 20, 1884. Serial No. 145,943. (No model.)

To all whom it may concern:

Be it known that I, EDWARD H. HALL, of the city of Brooklyn, in the county of Kings and State of New York, and a citizen of the United States of America, have invented a new and useful Improvement in the Screw-Propelling Apparatus of Steam-Vessels, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a horizontal section of the hull of a steam-vessel, cut on line $x x$, Fig. 2, which may be regarded as also the water-line, showing also the side screw-propellers in elevation containing my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a bow elevation. Fig. 4 is a cross-elevation on line $y y$, Fig. 2; and Fig. 5 is a cross-section on line $z z$, Fig. 1.

My invention relates to screw-propelling apparatus for steam-vessels in which screw-propellers located at or about amid-ships or the waist-line are used in conjunction with the stern screw-propeller, one or more; and my invention consists in the devices hereinafter described, and as more at length recited in the claim.

A is the hull of the vessel, of any desired proper form and dimensions, although in connection with my invention I prefer the comparatively flat-bottomed model and the water-line indicated in the drawings.

At B and B' are guards, one on each side of the exterior of the hull, placed below the water-line and extending lengthwise of the hull, their bow ends curving inward and disappearing a little abaft the stem, as shown. These guards are hollow, and are preferably formed of iron plates bolted together, so that they constitute both guards and floats. From the bow ends and from the stern ends to nearly the waist-line of the vessel these guards extend or project laterally from the hull, with walls or surfaces composed of planes approaching each other at and meeting at an angle, so that in the portions specified these guards are triangular in cross-section, as shown in Fig. 4, the hull forming one side of the triangle and the projected plane faces the other two sides thereof. At or about the waist-line of the vessel the form or configuration

of these guards is changed to rectangular, as shown in the drawings at B² and B³, and at about the ship's waist these rectangular portions are cut away, as shown at B⁴ and B⁵. In these rectangular recesses or spaces B⁴ and B⁵ are located, respectively, the side propeller-screws, C and C', and the rectangular adjacent ends of the guards forming these screw-propeller recesses should be of a width and height corresponding to the diameter of the screws C and C'. By this construction the screws C and C' are effectively guarded against injury, being protected from contact with floating objects or docks by the sides of the rectangular portions of the guards. The guard-floats B B' are supported and stayed in connection with the hull by means of cross-beams, (represented by broken lines in Fig. 1,) framed into the hull, and with their ends projecting out into the guards, and with the plates constituting the guards bolted thereto. Upon these cross-beams a in the rectangular portions B² B³ of the guards journal-boxes b for the shafts of the screws C C' are supported.

At D D' are two stern-screws, which may be of the usual form and construction, and the shafts $c c'$ thereof pass through the interior of the stern ends of the triangular guards B B', in which they are supported, journaled in suitable journal-boxes, and extending forward within the hull to their connection with the motive power.

I do not deem it necessary to show or describe the steam-engines, nor the mechanism for furnishing and communicating power to the propeller-shafts, as these may be any of such well-known devices.

I am aware that side propellers have been heretofore employed, and hence do not claim the same as new herein. I am also aware that such side propellers have been located in recesses formed in the ship's hull; but when thus located they have not been effectively guarded against injury, as is the case in my present invention, due to the rectangular structure of the guards at B² and B³, such rectangular portions being of an extent vertically and laterally corresponding to the diameter of the screws inclosed thereby. I am aware that guards or floats of semicircular cross-section have heretofore been projected from the hull of a ves-

sel, and that the propeller-shafts have been located therein; but such semicircular guards or floats presented great resistance to the water in the forward movement of the vessel, and at the same time were not adapted to protect the side propellers. Both of these difficulties are overcome by my invention, the triangular portions of my guards offering a minimum of resistance to the water when the vessel is moving forward, and at the same time giving great buoyancy and steadiness to the vessel, and, also, owing to the form of the rectangular portions B^2 and B^3 , effectively guarding the side screws.

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

The combination, with the hull of a vessel, of the guard-floats B and B' , one on each side and extending longitudinally of the hull, and having the forward and rearward triangular portions described, and the mid-ships rectangular portions B^2 and B^3 , respectively cut away to form the inclosing side-screw recesses, B^4 and B^5 , together with the side screws, C and C' , located respectively in said recesses, and the stern screws, all as and for the purpose set forth.

EDWARD H. HALL.

Witnesses:

WM. BUSSEY,
A. G. N. VERMILYA.