

D. W. ZANTZINGER.
Construction of Iron Vessels.

No. 157,264.

Patented Nov. 24, 1874.

FIG. 1.

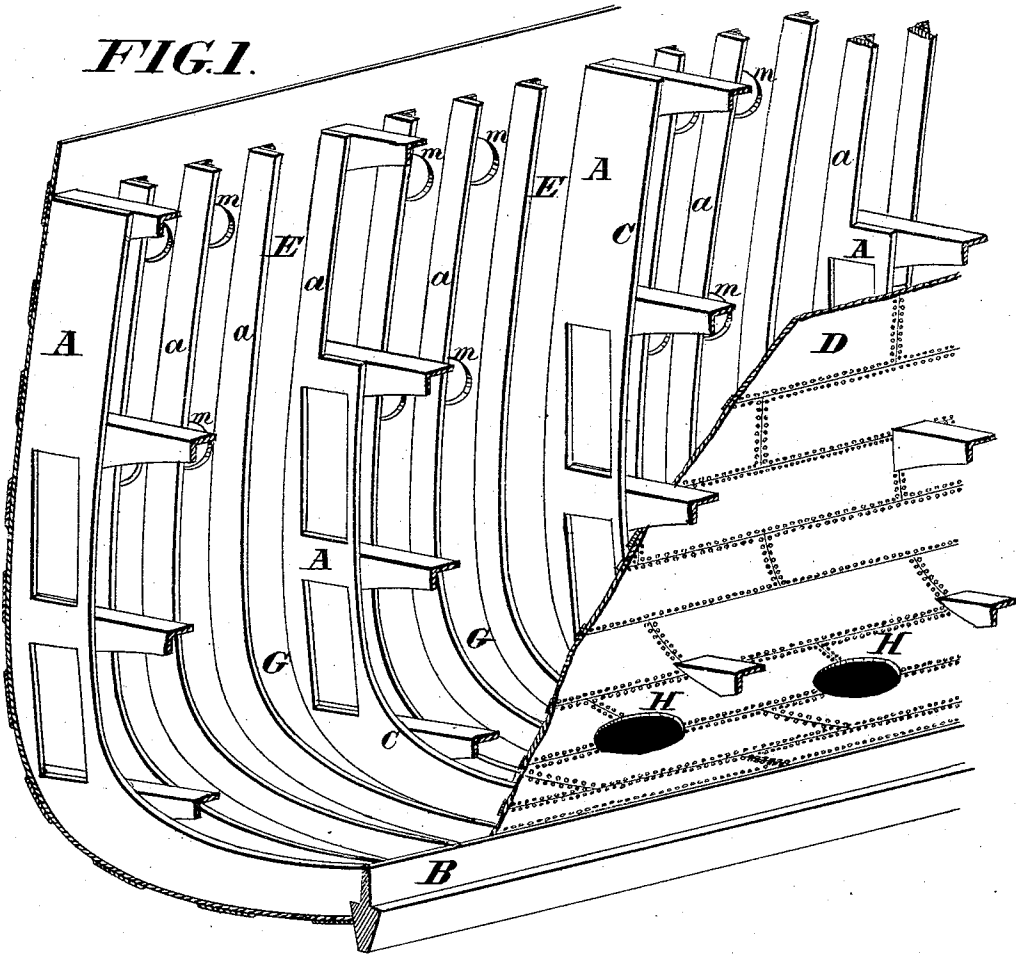
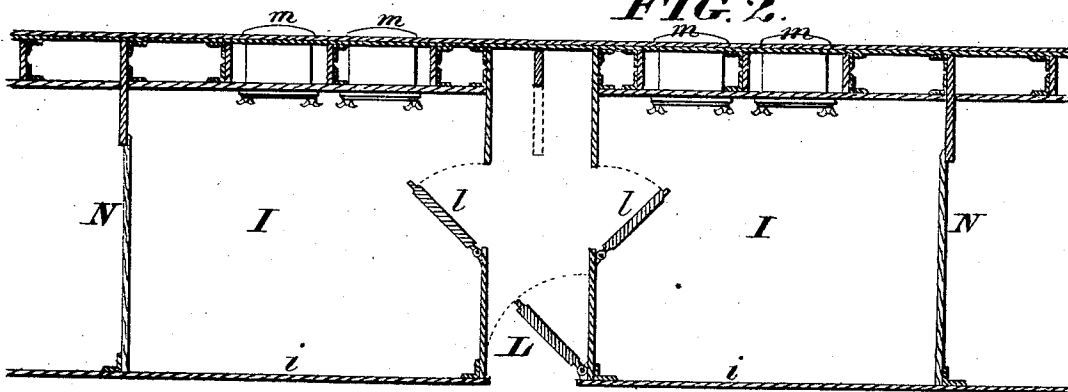


FIG. 2.



WITNESSES

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INVENTOR

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FIG. 3.

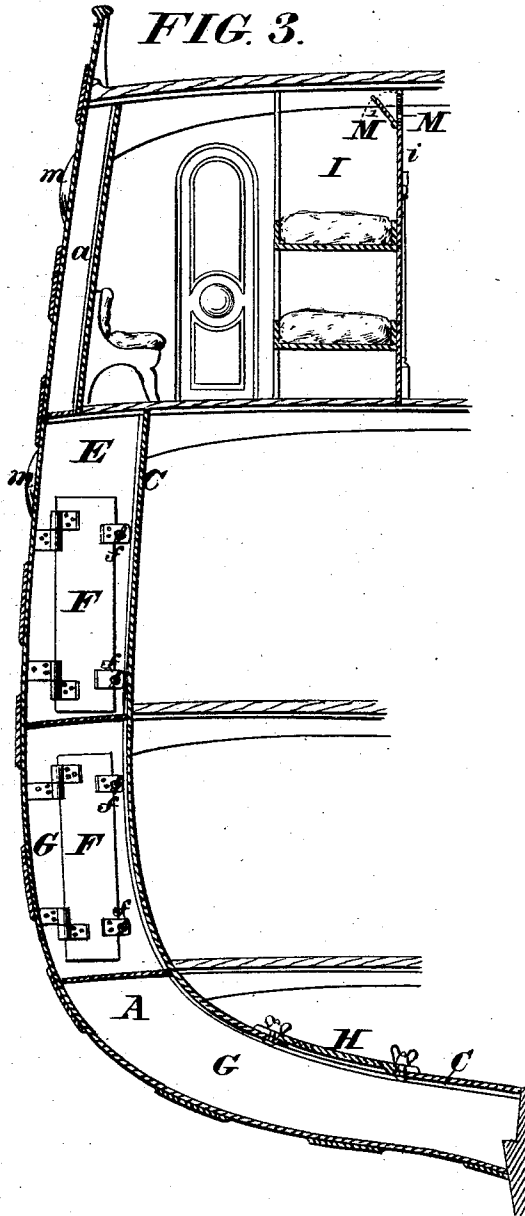
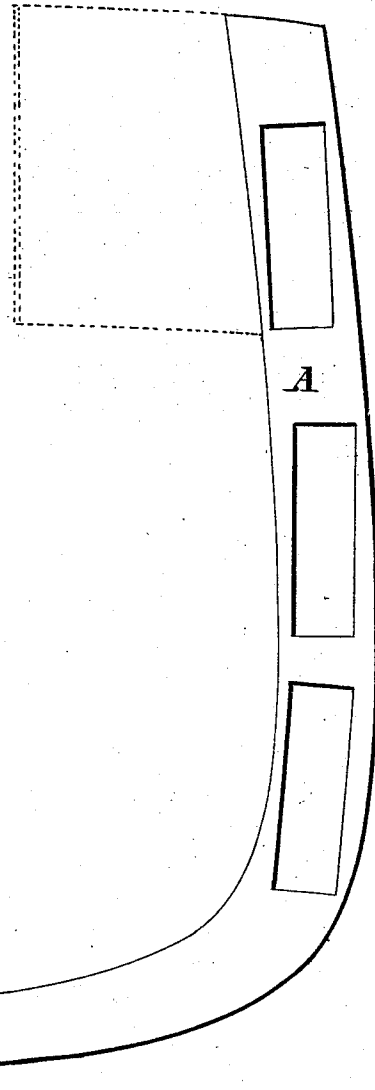


FIG. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

DANIEL W. ZANTZINGER, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN THE CONSTRUCTION OF IRON VESSELS.

Specification forming part of Letters Patent No. **157,264**, dated November 24, 1874; application filed September 9, 1874.

To all whom it may concern:

Be it known that I, DANIEL WEBSTER ZANTZINGER, of the city of Washington, District of Columbia, have invented certain Improvements in the Manner of Building Iron Vessels, of which the following is a specification, reference being had to the accompanying drawings, and the letters of reference thereon.

My invention consists in an improved plan of constructing the hulls of iron vessels by providing, at proper intervals, what I term broad ribs, such ribs taking the place of some of the ordinary ribs, and being extended to a sufficient breadth or depth transversely of the hull to form, when covered with an inner skin or lining, sectional water-tight compartments in addition to the bulk-heads constructed in the usual way, so that in case of accident, either by collision or otherwise, the aforesaid inner skin and the broad ribs bounding the sectional compartment where the injury may have occurred will prevent the entire compartment from being filled with water.

In the accompanying drawings, Figure 1 is a perspective view of a portion of one side of the frame with part of the inner skin removed. Fig. 2 is a horizontal section of a part of one side of the vessel through the cabin-space, between the upper and main decks. Fig. 3 is a transverse section of one side of the vessel. Fig. 4 is an elevation of one of the broad ribs, showing in dotted outline an extension-partition, such as are used for separating the cabin space.

I construct between each of the bulk-heads already constructed and now in use, at a distance of every eight (8) feet or less, a broad rib, A, two (2) feet wide at the ways, or bottom of the bulwarks, to follow parallel with the outside line of the hull to a depth of two-thirds ($\frac{2}{3}$) of her draft of water, thence diminishing to eighteen (18) inches wide at the keel, the thickness of the same being five-eighths ($\frac{5}{8}$) of an inch, and being riveted onto a false top keel or thin plate, B, one-half ($\frac{1}{2}$) of an inch thick, running parallel with and on top of the main keel. To make the sectional compartments I cover the inside edges C of the broad ribs with iron plating D three-eighths ($\frac{3}{8}$) of an inch thick, forming an inner skin.

Now, to make the spaces E between the broad ribs and the outside surface and the inner skin accessible, I construct iron doors F five and a half ($5\frac{1}{2}$) feet long by eighteen (18) inches wide, and three-eighths ($\frac{3}{8}$) of an inch thick, with three-quarters ($\frac{3}{4}$) of an inch flange, one-half ($\frac{1}{2}$) of an inch thick, shutting into grooves, with or without rubber being made on or in the broad ribs A. The doors are then made secure, when closed, by two (2) brass hinge thumb-screws, *f*, on both sides of the doors, so that they may be secured from either side, as hereinafter described, the same as used in securing port-lights. The above doors, when open, are secured to the side of the hull in a similar manner as when they are shut, or by a simple catch or hook. The spaces of these sectional compartments are made accessible in this way on each deck the whole length of the ship, thereby enabling two or more men to go through the several sectional compartments, one party going from the bow to the stern, and the other going in the opposite direction, which would bring them so as to each close a door on either side of the hull and securing it as above mentioned. The water would then only fill the space E between two of the broad ribs A, the outside of hull, the inner skin D, and two decks. The similar spaces G in the lower part of the vessel, where the broad ribs begin to diminish in width, are made accessible by means of man-holes H, two (2) or more feet in diameter, secured on the upper side in the same manner as the iron doors aforementioned. These last-named spaces G can be used for unassorted cargo. At the ends of the vessel, where she begins to taper off, the broad ribs need not necessarily be as wide as in the other sections of the vessel, and man-holes, as above mentioned, can be used where the space would not admit of the use of the iron doors. Where the cabins I are situated, every other broad rib extends only to the floor of the main deck, being riveted to one of the beams thereof, and then between the main and spar decks the inner skin, before referred to, is constructed along the front of the cabins, as shown at *i*, being riveted to the beams of the main and spar decks, and finished with paneling, &c., on the inside of passage-way. The short

passage connecting the two state-rooms with the main passage-way is closed by an iron door, L, with flanged edges and clamps, as heretofore described, which, when open, forms one of the panels of the above short passage. In Fig. 2 this paneled door is shown partly open. The cabin doors *ll* may be of common construction. The cabins are ventilated by means of small oblong openings M, five (5) feet long by six (6) inches wide, which are made water-tight by thin iron shutters M', with flanged edges and clamps, the same as used on doors, closed from the inside, and made secure on the passage side. The partitions N, separating the cabins, between the broad ribs A and the inner skin, heretofore described, are constructed of thin iron plating, which can be rolled out in one piece, and riveted onto the broad rib A and one of the spar-deck beams, and being secured in the same manner to the inner skin and one of the beams of the main deck with angle-irons.

By the construction of vessels in this manner, especially those of a large tonnage, it will be readily seen that it enables them to proceed to the port for which they are destined without having to run into some other port en route to repair the damage caused by accident or otherwise, saving such time as may be caused in making the delay that would arise therefrom. In vessels of a large draft

of water, the port-lights *m* for the lower deck, just above the draft-line, would be arranged just the same as in other vessels, only they would have to be so spaced as not to come behind a door when open. And in the construction of vessels in this way the additional weight of the improvement could be lessened considerably by reducing an equal number of the small ribs between each of the broad ribs. This improvement can be made on a smaller scale in vessels already constructed, or in the course of construction.

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

The construction of hull herein described, consisting of a customary iron frame with broad ribs A introduced at intervals in addition to the ordinary ribs, the inner skin D, riveted to the inner edge C of the broad ribs, and transverse partition introduced between the main and upper decks, so as to provide water-tight cells entirely surrounding the vessel, while giving great additional strength thereto.

In testimony that I claim the above as my own invention, I have hereunto subscribed my name in the presence of two witnesses.

DANL. WEBSTER ZANTZINGER.

Witnesses:

H. S. VANDERBILT,
WM. B. MORGAN.