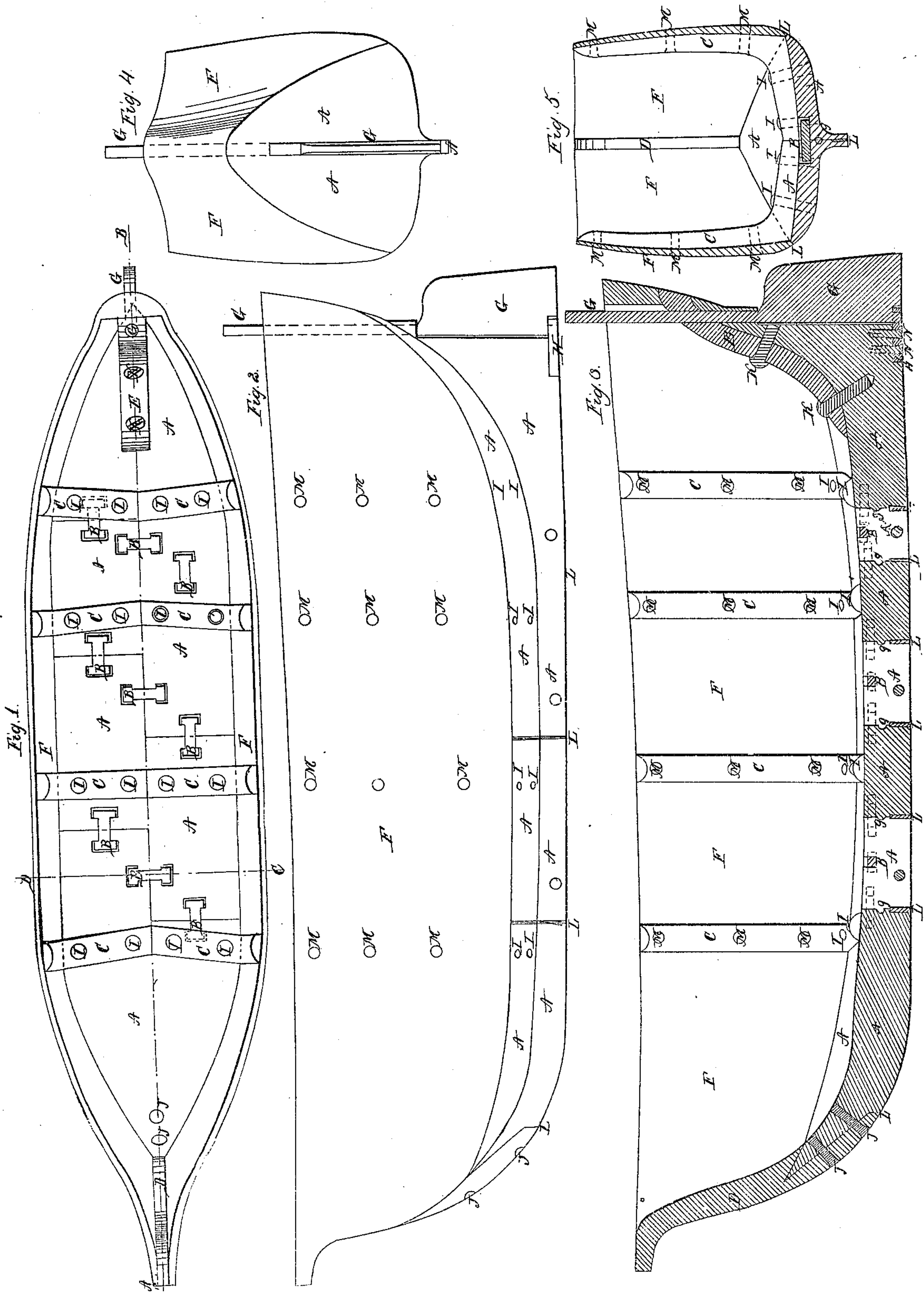


S. W. Brown.

Iron Ship.

No. 14,048.

Patented Jan. 8, 1856.



UNITED STATES PATENT OFFICE.

SAMUEL W. BROWN, OF LOWELL, MASSACHUSETTS.

CONSTRUCTING THE BOTTOMS OF SHIPS AND OTHER VESSELS.

Specification of Letters Patent No. 14,048, dated January 8, 1856.

To all whom it may concern:

Be it known that I, SAMUEL W. BROWN, of Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a novel and useful Improvement in the Construction of Ships and other Vessels; and I hereby declare that the following specification, in connection with the accompanying drawings and references thereon, constitutes a lucid, clear, and exact description of the construction and use of the same.

In referring to the said drawings, Figure 1 denotes a plan or top view of my improved vessel with its bottom or lower portion constructed of a mass of iron, and the upper portion of wood. Fig. 2 denotes a side elevation of the same. Fig. 3 a longitudinal and vertical section on line A, B, Fig. 1. Fig. 4 denotes an end view of the same; Fig. 5, a transverse and vertical section on line C, D, Fig. 1. Fig. 6, denotes a plan of a vessel wholly of iron which is constructed according to my improvement. Fig. 7, denotes a longitudinal and vertical section of the same on line E, F, Fig. 6. Fig. 8, denotes a transverse and vertical section on line G, H, Fig. 6.

Invention.—The nature of my invention consists in the construction of cast iron, of so much of the lower or bottom part of vessels as may be necessary to constitute both the ship's bottom, and ballast, as far as it may be necessary for this iron to extend upward, which, if desired may be made of one entire mass or iron, or of several pieces connected or joined to each other, and to effectively answer the purpose of ballast, and serving as the bottom of the vessel as far as the ballast of iron extends upward as aforesaid, thereby occupying the least possible space and allowing any desired weight at the lowest part of the ship, in order that it may carry more sail with less liability to careen or to draw less water with the same sail and with less careening and of course move more steady through the water, and yield more space for goods or freight in the ship by reason of the great weight of iron in its bottom, which occupies much less space than stone or pig iron ballast, and exerts a great influence to steady the ship, all as will be hereafter seen, the upper portion or hull of the vessel being made of wood or iron as may be desired.

Construction.—To enable persons skilled

in the art to which my invention apertains, to construct and carry out the same, I will describe it as follows: Where the upper portion of the vessel is made of wood with the bottom or lower portion constructed according to my improvement that is, of one solid mass of iron, or of several pieces firmly connected together, to constitute one entire whole as hereafter seen, I construct the keel, keelson, and so much of the bottom of the vessel as is necessary for ballast, of several pieces of cast iron seen at A, A, which are fitted together with or without dowels, seen at *g, g*, as may be desired, and they are firmly held together by the double headed bolts B, B, &c. Suitable recesses are formed in the pieces A, A, to receive the bolts B, B, by casting, coring, or otherwise as seen in the drawing. Then the pieces for the iron bottom are placed together and the hooks or double headed bolts are heated red hot and dropped into the slots designed to receive them. The shrinking of these bolts when they cool will draw the pieces A, A, together with great force, and thus hold them with great firmness by the inside of both of the heads of the bolts B, B, coming in contact with the cast iron pieces A, A, as will be readily seen in the drawing. Rods with a nut on one or both ends will answer instead of the bolts B, B, to hold the different pieces A, A, together, which constitute the ballast bottom of the ship, the dowels *g, g*, &c., answering as steady pins to keep the several bottom pieces even at their joints in conjunction with the bolts seen at *n, n*, &c. The pieces A, A, are formed as seen in the drawing so as to break joints and thereby giving the ship's bottom the greatest possible strength, suitable places are left in or between the outside of the joints of the pieces A, A, and also between them and the wood work F, to receive the calking as seen at L, L, &c.

To the iron bottom I secure the ribs of the vessel seen at C, C, by the bolts I, I, as seen in the drawing or of any other desired form, I then form the planking F, F, to the ribs C, C, and thus firmly secure them by the bolts M, M, their lower edges being so fitted to the iron bottom A, A, as to receive the calking L, L.

It will be seen that my iron bottom for vessels is of sufficient thickness and weight to constitute the ballast of the vessel, and also giving the best possible result by plac-

ing this ballast at the very lowest possible point or part of the ship by reason of its being the bottom of the ship itself, as seen in the drawing.

5 Figs. 6, 7, and 8 show how my iron ballast bottom can be joined or constructed with the top or hull of iron. A^2 , A^2 , is the iron ballast bottom, the same as heretofore described. To the top of the bottom A^2 I
10 secure suitable cast or wrought iron ribs seen at C^2 , C^2 , by means of the bolts I^2 , I^2 . To the forward part of the bottom I fit the iron bow D^2 and secure it firmly to the bottom A^2 by the bolts J^2 J^2 J^2 , a proper
15 place seen at L^2 being left between it and the bottom A^2 to receive the calkage L^2 . Similar places are also left as seen at L^2 , L^2 , L^2 , &c., between the several pieces composing the bottom.

20 To the stern I fit an iron upright, seen at E which is firmly secured to the bottom A^2 , A^2 , by the bolts K^2 K^2 . The top end of the rudder G^2 passes through and turns in this upright, while its lower end passes through
25 and turns in the step H^2 which is secured to the bottom A^2 by the bolts N^2 N^2 . The iron frame being thus constructed is ready to receive the iron covering plates seen at F^2 , &c., which are strongly riveted to the ribs
30 C^2 , C^2 , bow D^2 , and upright E^2 by the rivets or bolts I^2 , I^2 , I^2 , &c. The horizontal joints that occur between the covering plates are secured by the horizontal lap pieces seen at d , d , &c., and rivets seen at
35 i , i , &c. Similar lap pieces are seen at c , c , to cover the perpendicular joints and make them tight by means of the rivets i , i . The top edge of the ballast bottom is cast or formed with a rabbet in it, seen at Fig. 8,
40 to receive the lower edges of the covering plates F^2 , F^2 , &c., and make smooth work on the outside of the vessel, these plates being held to the bottom by the rivets seen at a , a , Figs. 7 and 8.

45 I do not confine myself to this mode of construction as other methods may be adopted or preferred by persons constructing iron ships' hulls, and attaching them to my within described ballast bottom.

50 The advantages of my invention, which I

have established by actual experiment, which I have made are as follows, in the old kind or kettle bottom vessels, 24.39 per cent. more sail may be used or gained in my favor, over the same kind of vessel ballasted with stone, as is usually done, with the same careening in both cases, and both drawing the same water, and a saving of 21.50 per cent. over the same kind and size of vessel when ballasted with pig iron.
55 When the clipper form of vessel is used, and built as intended by my invention, it will carry 106 per cent. more sail, with the same careening as would be the case with the same size and shape every way of a wooden
60 clipper ship ballasted with stone, and 28.26 more sail can be carried with the same careening in both cases, where pig iron is used as ballast. In the clipper form of vessel built according to my invention, a
65 saving of 11.47 per cent. of the draft of water, when pig iron is used as ballast, that is with the same careening of my vessel, as one of the same size of wooden, or old kind of ship. My vessel with ballast bottom will
70 draw 11.47 per cent. less water, and the draft of water for my vessel will be 19.67 per cent. less than the same shape and size of vessel would be if stone be used as ballast therein. Another great advantage consists
75 in the room gained in my vessel over the old vessels for freight, by reason of the less amount of space required for the iron or ballast bottom, over that of the old bottom when ballasted with stone or pig iron, there-
80 by rendering all the excess room so saved available for packing and transporting freight, essentially as set forth.

Having thus described my improvement, what I claim as my invention and desire to
85 secure by Letters Patent is—

Making the entire bottom and keel of ships and other vessels of thick and continuous plates of metal for the united purposes of bottom and ballast as herein set
90 forth.

SAML. W. BROWN.

Witnesses:

CHARLES SPERRY, Jr.,

WM. WHITMORE.