

E. S. HOUGH.
 MULTIPLE HATCH CONSTRUCTION FOR VESSELS.
 APPLICATION FILED JAN. 23, 1912.

1,033,403.

Patented July 23, 1912.

Fig. 1.

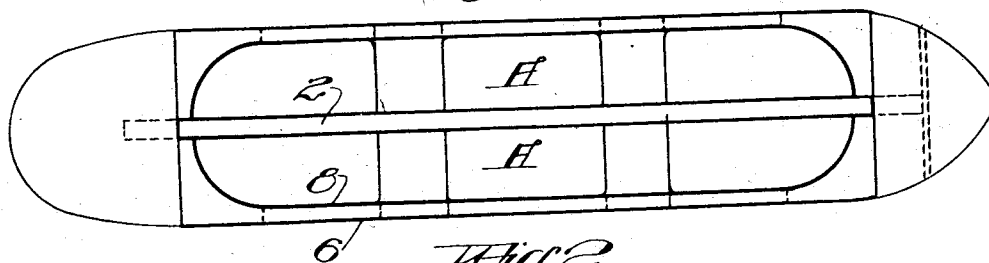


Fig. 2.

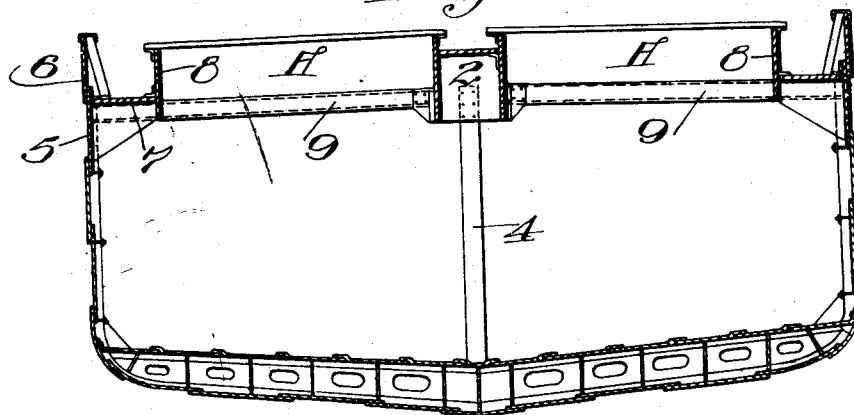
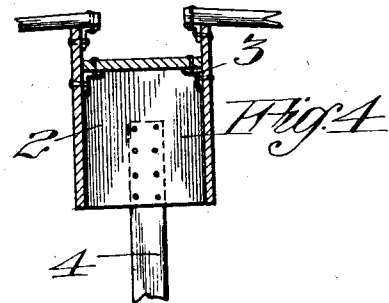
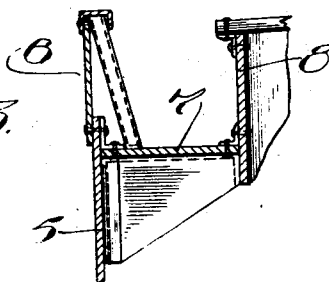


Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

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MULTIPLE-HATCH CONSTRUCTION FOR VESSELS.

1,033,403.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EDWARD S. HOUGH, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Multiple-Hatch Construction for Vessels, of which the following is a specification.

My invention relates to an improved construction of vessels, in which large multiple hatches are employed for the handling of bulky material, which is preferably done directly by machinery.

It consists in the novel construction and reinforcing of the longitudinal and transverse members of the vessel structure, and in details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a plan view of the invention. Fig. 2 is a cross section. Fig. 3 is an enlarged view of the rail girder. Fig. 4 is an enlarged view of the central box girder.

For the purpose of handling bulky material and particularly in the lumber trade on the Pacific Coast, where the lumber is usually much longer and heavier than elsewhere, it is desirable to have hatches of the largest possible size, so that lumber may be introduced and removed by mechanical devices, and the work of stevedoring and handling of the material, with the attendant expense, be greatly reduced. For this purpose I build the vessel preferably with twin hatches A upon opposite sides of the center, such hatches being very long practically leaving the center of the vessel almost entirely unsupported by deck beams and usual construction. For the purpose of properly strengthening a vessel having such openings, I strengthen the ship, first, by means of a girder 2, which in the present case I have shown to be an open bottom, box girder which may be built of plate steel and angle pieces, as at 3. Such a girder may have its connection with the central portion or keelson of the vessel by means of a trunk built longitudinally through the ship, or in other constructions this girder may be supported at intervals by columns 4 extending through it to the keelson.

Upon the sides of the vessel I have shown a strengthening girder, which may be built up, as herein shown, in the form of an I-section transversely. This section may be made

by employing what are known as the "sheer or bulwark-strakes" of the vessel 5 and 6 to form one portion of the girder; the web will then be formed by a stringer plate 7, which extends from the side of the vessel to the hatches, and the hatch coaming 8 will form the other flange of the I-beam. Thus, these strengthening beams enter into and form a part of the vessel's construction and are capable of resisting enormous strains. In order to unite these girders at suitable intervals and to form a bond between them, I employ transverse deck stays 9, extending from one girder to the other and united therewith.

By this construction I am enabled to make the vessel sufficiently stiff to resist strains, and to employ hatches which may be as much as 35 or 40 feet in length by 17 feet or more in width, depending on the size of the vessel, so that while a sufficient strength may be guaranteed, the openings will allow cranes or derricks to be used to handle and place the long timbers which may be the cargo of a lumber vessel, or other equivalent bulky material.

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

1. A vessel having twin hatches, strengthening girders extending longitudinally upon each side of said hatches, a central girder of inverted box-like form, vertical supports between said girder and the keelson, and transverse deck stays extending between the central and side girders.

2. A vessel having twin hatches, side girders, the webs of said girders being horizontal and forming the stringer plates of the vessel, and the top and bottom flanges being vertically disposed and forming respectively the hatch coaming and the sheer and bulwark strakes, a central inverted box girder having supported connections between itself and the keelson, and transverse stays at intervals between the side and central girders.

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

EDWARD S. HOUGH.

Witnesses:

CHARLES EDELMAN,
JOHN H. HERRING.