

(No Model.)

4 Sheets—Sheet 1.

C. D. DOXFORD.
CONSTRUCTION OF HULLS OF VESSELS.

No. 485,462.

Patented Nov. 1, 1892.

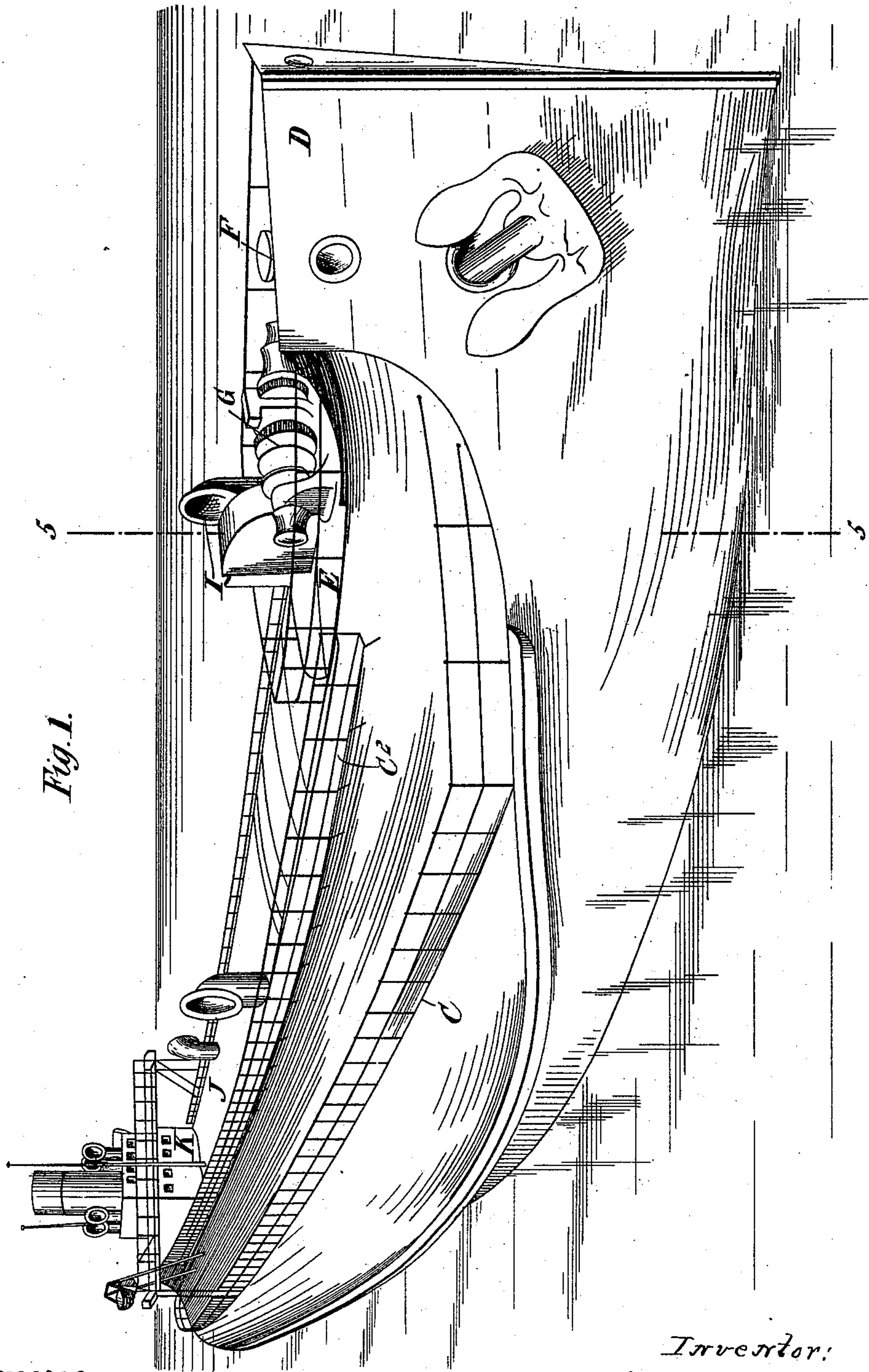


Fig. 1.

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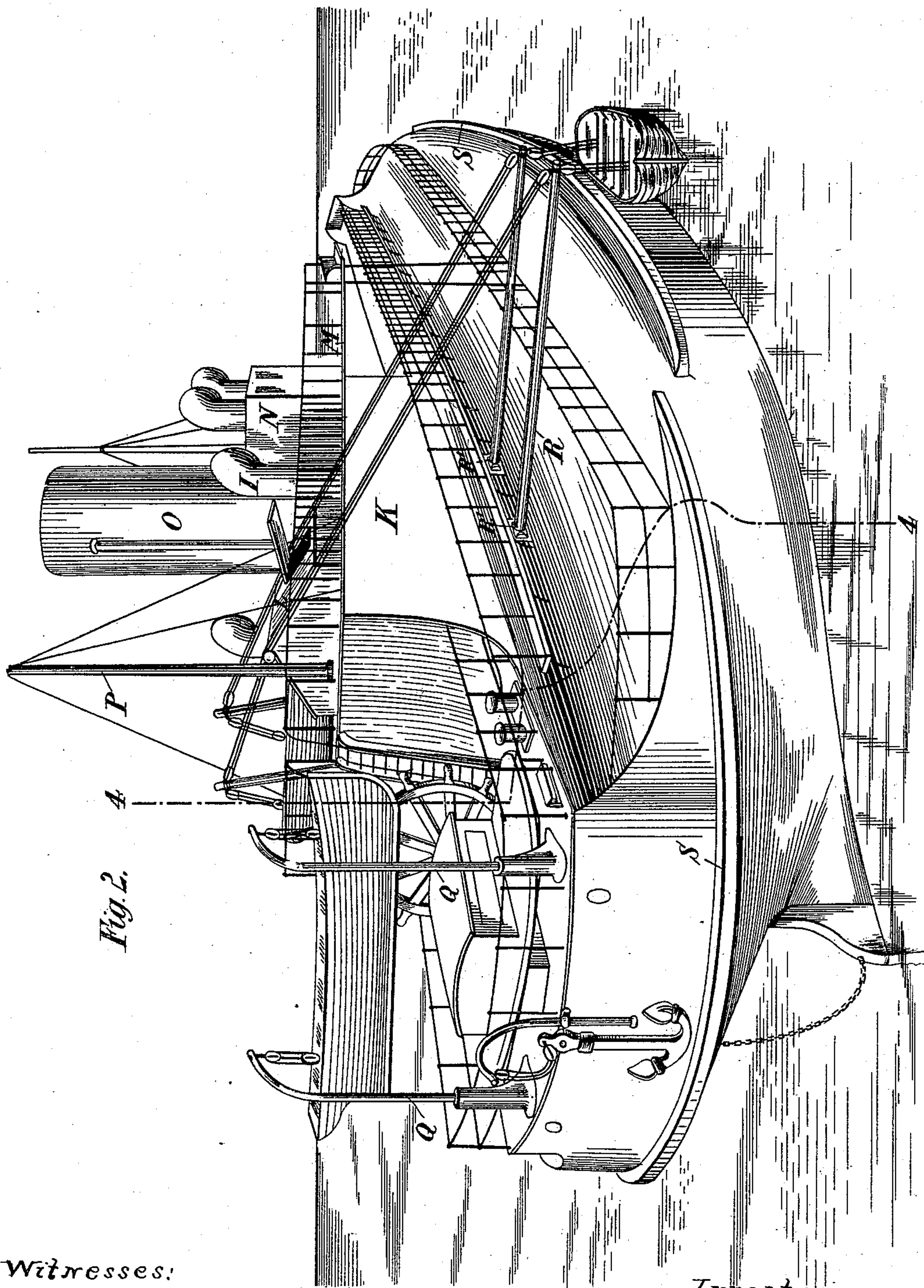


Fig. 2.

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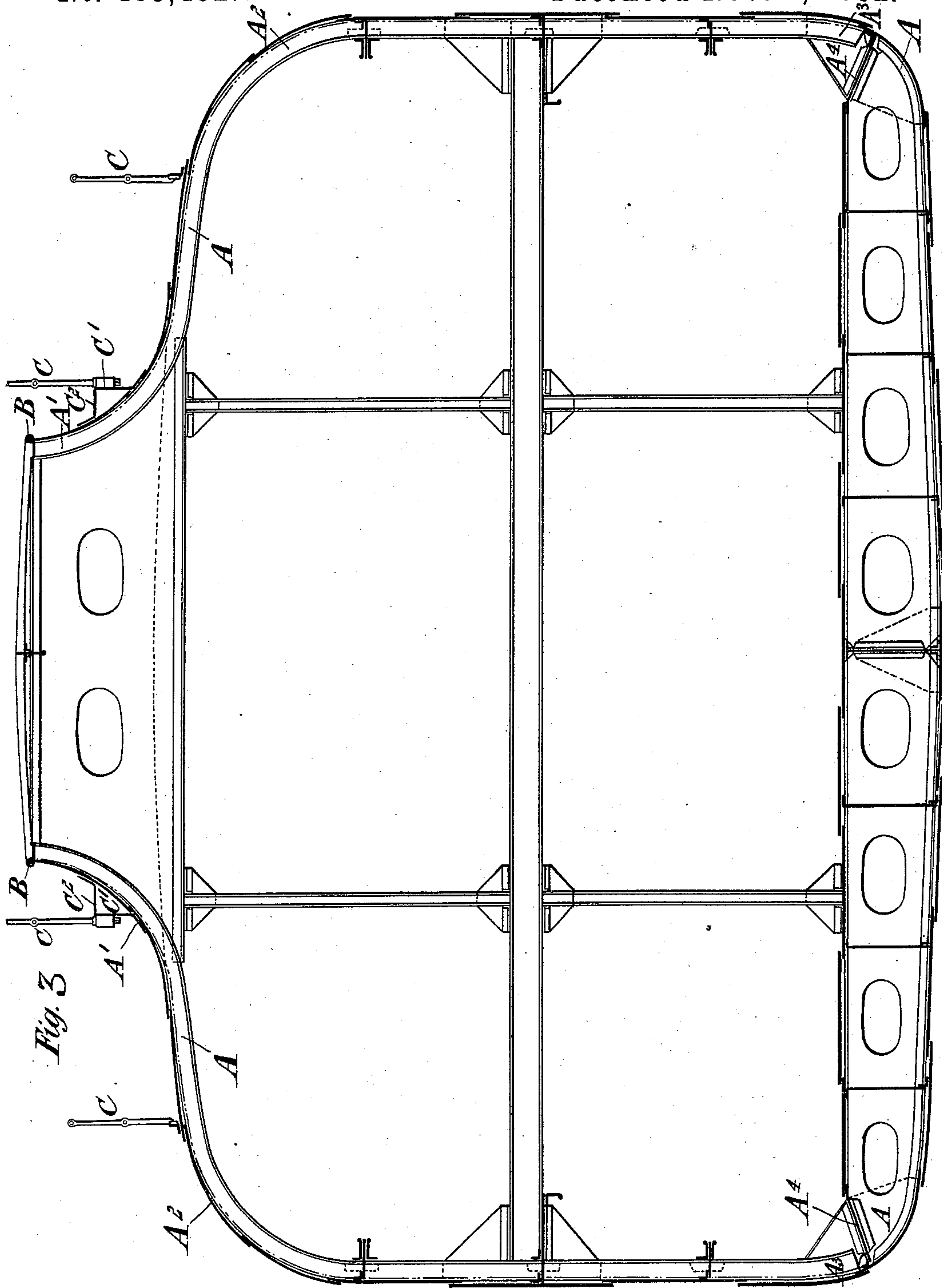
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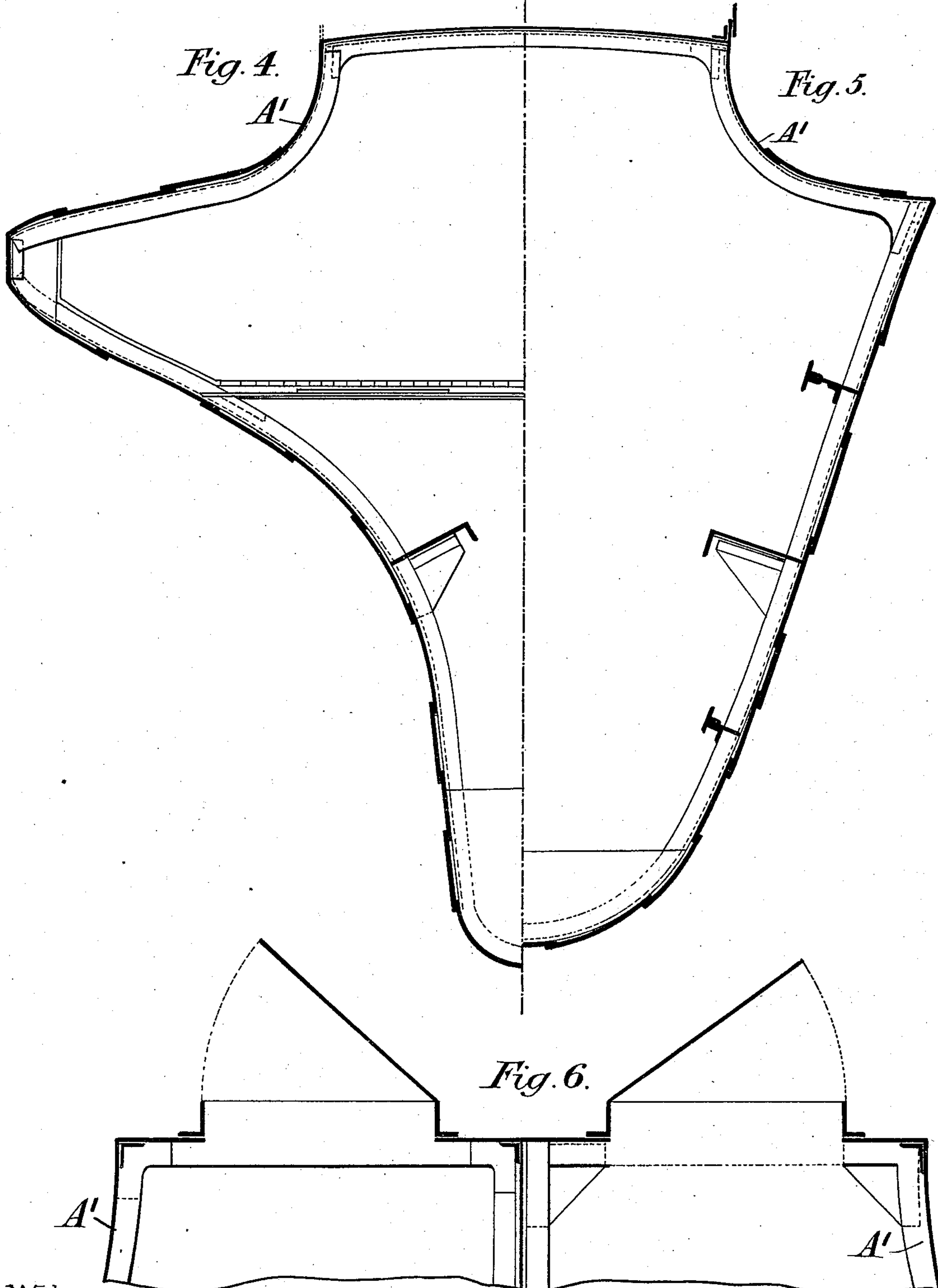
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UNITED STATES PATENT OFFICE.

CHARLES DAVID DOXFORD, OF SUNDERLAND, ENGLAND.

CONSTRUCTION OF HULLS OF VESSELS.

SPECIFICATION forming part of Letters Patent No. 485,462, dated November 1, 1892.

Application filed November 19, 1891. Serial No. 412,384. (No model.)

To all whom it may concern:

Be it known that I, CHARLES DAVID DOXFORD, a subject of the Queen of England, residing at Sunderland, in England, have invented certain new and useful Improvements in or Relating to the Hulls of Vessels, of which the following is a specification.

This invention relates to the construction and arrangement of the hulls of vessels, particularly steam-vessels adapted for cargo purposes. These vessels could be used for various kinds of cargoes, but are particularly applicable to cargoes—such as grain, coal, oil, and the like—which are more or less liable to shift and which are carried in bulk. The following description will serve to indicate the invention, although it will be understood that the details may be varied without departing from the spirit of the invention.

In carrying this invention into practice the ordinary deck is dispensed with and the sides curved inward with a convex curve for a suitable distance—say, for example, one third of the total width at each side—and then upward with a concave curve, the top of these last curves reaching to the hatchway-combings or the platform-deck, in which the hatches would be formed. The above would represent the shape of the plates and framings amidships (the latter being carried continuously up as far as the plates,) and these would be carried fore and aft without material variation for the greater part of the length of the vessel, merging at each end into a bow and stern of substantially-ordinary construction. The hatchway extends over practically the whole length of the hold or cargo-space, and may be closed by entirely-independent covers, or these may be hinged or otherwise suitably connected and provided with permanent fastenings or arranged to be bolted down after each removal. The sides of the hatchway may be stayed across in any suitable manner, as by simple stays or by portions of fixed plating between some of the covers.

The engine and boiler rooms, coal-bunkers, cabins, and offices may be located at the stern end of the vessel, behind the cargo-space, or amidships, and the quarters for the officers and crew either at the bow or stern, according to circumstances. The bows need not be carried up much higher than the before-men-

tioned hatchway-combings or platform-deck and would be left for the most part clear of incumbrances beyond possibly the warping-capstan, the windlass, the entrance to the fore-castle or men's quarters, to protect which and generally to raise the height of the bows the forward plates may be carried up to a suitable level.

In the accompanying drawings, Figure 1 is a perspective view of a vessel constructed according to this invention, taken from in front of the starboard bow. Fig. 2 is a similar view taken from the stern, and Fig. 3 is a vertical midships cross-section showing the arrangement of the frames and plates. Figs. 4 and 5 are cross-sections upon the lines 4 4 of Fig. 2 and 5 5 of Fig. 1, and they serve, respectively, to indicate the arrangement of the frames at those parts. Fig. 6 is a section similar to Fig. 3 and indicates the closed platform-deck and hinged hatches suitable for a vessel to carry oil in bulk.

Like letters represent like parts throughout the drawings.

Describing first Fig. 3, A represents the framings, which are carried continuously from the hatchway-combings B or platform-deck with a concave curve at A' and a convex curve at A², then practically straight down to the point A³, where they are interrupted by the keelson A⁴, and then carried along the bottom to a similar point upon the opposite side, where another break occurs, and they are then continued up to the hatchway-combings B on the opposite side, the curves A' and A² being repeated. Upon this framing the plates are secured in the usual manner and partake of the same outline. The framings may be supported by any suitable arrangement of vertical, horizontal, and longitudinal ties or supports—such, for example, as indicated in the drawing Fig. 3. Hand-rails C may be secured where required to enable the horizontal portion of the skin of the vessel to be traversed, those rails C nearest to the hatchway-combings B being preferably carried upon angle-brackets C', or the brackets C' may be replaced by a "continuous" platform C² to facilitate passage along it.

The above-described arrangement with the concave and convex curves is to be preferred; but it will be seen that the same general effect

could to a large extent be obtained by forming the portions which are described and illustrated herein as curves A' and A^2 in straight lines, as shown in dotted lines in Fig. 3.

5 The general external appearance of this vessel will be understood by reference to the views Figs. 1 and 2, from the former of which it will be seen that the special shape illustrated in Fig. 3 is carried forward to nearly
10 the end of the vessel, where it merges into a bow of ordinary construction, the plates of which may be carried up at D to a level above that of what we may term the "forecastle-deck" E, so as to protect the latter as much as
15 possible. This deck would carry very few fittings or encumbrances, which would be generally confined to the warping-capstan F, the windlass G, the forecastle-entrance H, and the wind-shafts I.

20 As will be seen by reference to Fig. 3, the main deck is composed of the hatches J, which cover in the cargo, there being practically or absolutely one long hatch extending from the superstructure K at the stern to the forecastle-deck at the bows, although it will be possible
25 in fine weather to walk along inside the outer railings C upon the horizontal plates between the two curves A' and A^2 , Fig. 3, as well as along the platform C^2 .

30 Fig. 2 illustrates the above-described special construction of the vessel merging into an ordinary stern, a superstructure K being provided at this end of the vessel, in which the cabins, officers' quarters, stores, and offices
35 may be located. The engines and boilers would be located beneath the superstructure K, but might extend up into it or a portion of it, a deck-light L being provided to admit light and air to the engine-room. The top or
40 roof of the superstructure K forms a deck which may be used for observation and promenade purposes, and bridges M may extend on either side and carry at their outer ends the usual side lights. The deck may also be pro-
45 vided with a conning-tower or chart-house N, wind-shafts I, and the usual fittings and appurtenances. The funnel O would be carried up through the superstructure K, and although the vessel is intended to be dependent
50 upon steam for its propelling power it may be provided with small masts P for signaling purposes or to carry some sail in case of accident to the machinery. Masts and sails may be fitted when required, as with an ordi-
55 nary steamer.

The boats may be stowed or carried wherever found most convenient. In Fig. 2 one boat is shown carried upon the davits Q at the extreme end of the vessel, while others
60 are carried upon the spars R, hinged or jointed at R' to the skin of the vessel and carrying at their outer ends the usual falls or tackle by which the boats are suspended. The spars R may be connected by suitable blocks and
65 tackle with a convenient portion of the superstructure, deck, or other portion of the vessel, so that when the boats are not required for

use the spars may be raised up into an approximately-vertical position, as shown on the left-hand side of the vessel in Fig. 2, or lowered to an approximately-horizontal position
70 when the boats are to be lowered, as shown on the right-hand side of the vessel in the same figure. Whalings or fending-beams S may be provided where necessary.

75 It will thus be seen that, while the vessel constructed according to this invention has the advantages of the usual bow and stern, it has also the advantage of having none of the usual decks upon which water would lodge,
80 while its general construction is simplified with an increase in strength and a saving in the quantity of material, while the buoyancy is increased and more evenly distributed than usual. The loading and discharging of cargo
85 is expedited by there being practically but a single hatchway extending to the whole of the cargo-space.

The vessel, as above described, is intended as a cargo-vessel only; but it will be under-
90 stood that it may be constructed as a passenger-vessel, either exclusive of cargo or in addition to cargo, by modifying the fittings and arrangements accordingly.

I claim—

95 1. A steam-vessel having the vertical sides extending to about the water-line, the platform-deck J, extending longitudinally of the vessel, in which are the hatchways, and the sloping covering rising from the vertical sides
100 and connecting them with the said deck, the said covering having the concave and the convex exterior curves, substantially as described.

105 2. The framing for a steam-vessel, consisting of the vertical portions, rising to about the water-line, and the top or upper portions, formed with the reverse transverse curves A' and A^2 , and the hatchway-combings at the upper
110 edges of the said top or vertical portions of the framing, substantially as set forth.

115 3. A steam-vessel having a bow and a stern portion of ordinary construction, the straight vertical side walls between the bow and stern portions extending up to about the water-line, the hatchways arranged centrally of the vessel between the bow and stern portions and forming a platform-deck, and the curved sloping covering connecting the side walls of the vessel with the hatch-combings, substantially
120 as set forth.

125 4. A steam-vessel having a sloping upper portion between the bow and the stern and below the hatchway-combings formed with a concave exterior curve A' on either side of the vessel and having rail-protected platforms C^2 upon such concave portions of the covering, substantially as set forth.

130 5. A steam-vessel having a platform-deck J between the bow and stern portions of the vessel and formed of the hatchway-covers and having the curved covering extending from said platform-deck to about the water-line and having, also, a superstructure K, located

at the stern portion of the vessel, substantially as set forth.

5 6. A steam-vessel having a centrally-disposed platform-deck J, arranged longitudinally of the vessel, the curved sloping covering-walls extending from said deck to about the water-line, the forecastle-deck above the said deck J, and the elevated bow D, substantially as set forth.

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

CHARLES DAVID DOXFORD.

Witnesses:

ALFRED J. BOULT,
HARRY B. BRIDGES.