

No. 675,812.

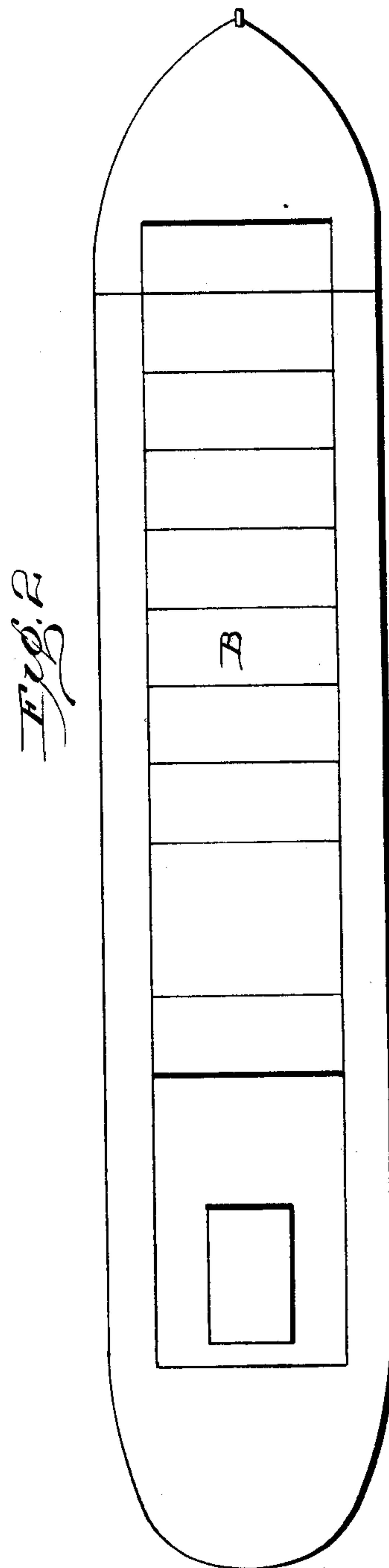
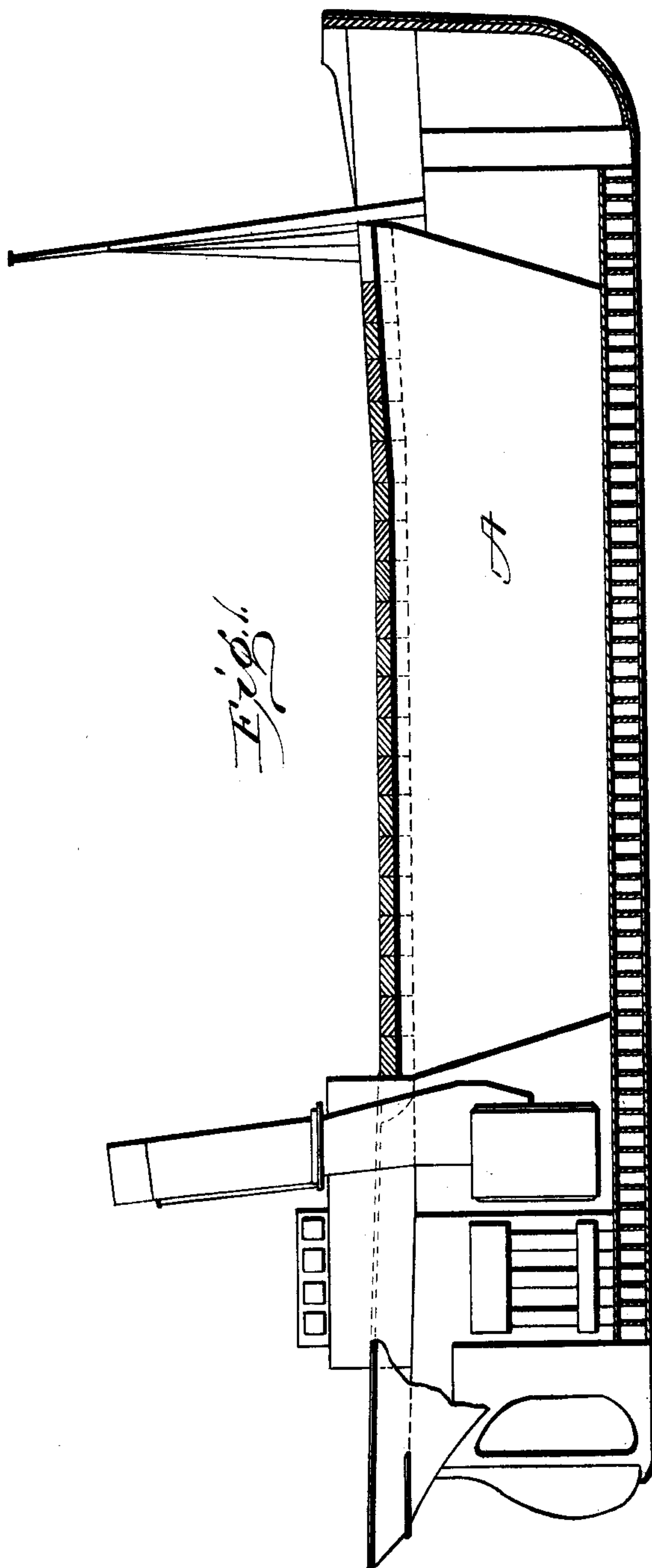
Patented June 4, 1901.

J. CAMPBELL.  
NAVIGABLE VESSEL.

(Application filed Aug. 27, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:  
J. M. Fowler Jr.  
Thomas Durant

Inventor  
James Campbell  
Charles H. Smith  
his Attys

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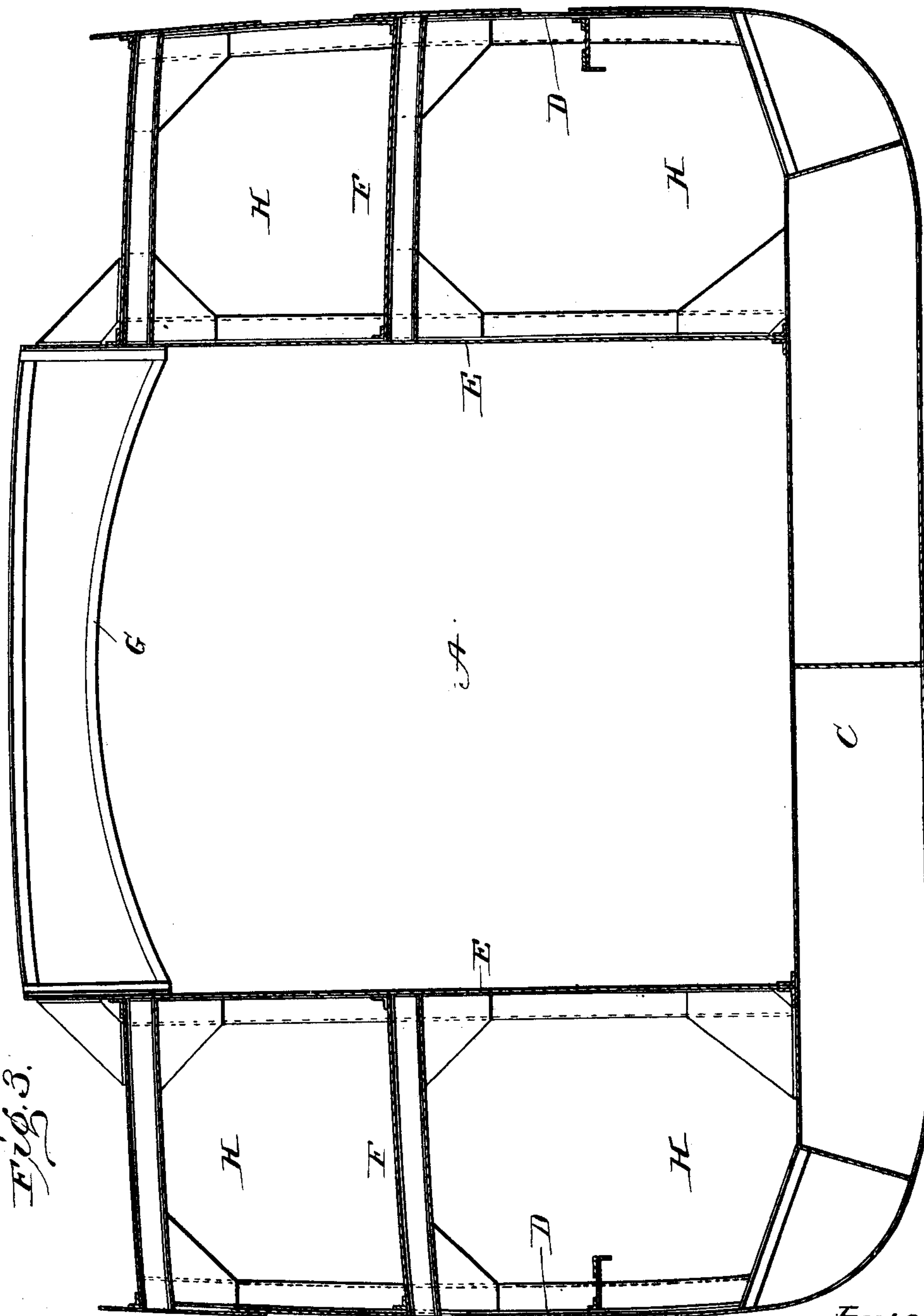


Fig. 3.

witnesses:  
J. M. Fowler Jr.  
Thomas Durant

Inventor  
James Campbell  
by Church & Church  
his Atty.



# UNITED STATES PATENT OFFICE.

JAMES CAMPBELL, OF LONDON, ENGLAND.

## NAVIGABLE VESSEL.

SPECIFICATION forming part of Letters Patent No. 675,812, dated June 4, 1901.

Application filed August 27, 1900. Serial No. 28,231. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES CAMPBELL, a subject of the Queen of England, residing at London and Highfield, England, have invented certain new and useful Improvements in or Relating to Navigable Vessels, (for which application has been made in Great Britain under No. 6,817, dated April 11, 1900,) of which the following is a specification.

This invention relates to navigable vessels, its object being the construction at a moderate cost of a strong vessel capable of carrying heavy cargoes, and in particular iron ore, in such a manner that no part of the cargo shall be screened from the action of the discharging apparatus by any part of the hull.

According to this invention a trunk or hopper is constructed in the vessel extending from the stoke-hold bulkhead of the machinery-space, which preferably should be situated in the stern or where a cross-bunker is fitted from the forward cross-bunker bulkhead forward to the collision-bulkhead or as far forward as the form of the ship will permit. Where the engines are amidships, two or more longitudinal trunks or hoppers may be provided. To obviate the loss of strength which otherwise this construction would involve, owing to the absence of hold and deck beams, it is proposed to make the trunk or hopper bulkheads of substantial construction by introducing into them heavy plating and numerous stiffeners and also to connect these bulkheads to the main frames of the vessel and to the side plating by beams of heavy scantling and by thick deck-plating and stringers. There may be weather and partial 'tween decks. It is preferred that the two sides of the ship alongside the trunk or hopper should be of sufficient strength in themselves and independently of the strength of the trunk to sustain all local stresses likely to be brought upon them. The spaces in the wings between the side of the trunk and the inner face of the skin-plating being bounded by strong structures can conveniently be utilized to contain water-ballast, which may be placed above the partial 'tween decks where desired. Hatch tie-beams of great depth securely, but in most cases removably, connected to the hatch-coamings, which are of appropriate strength and connected to the

weather-deck, are provided at frequent intervals along the trunk to prevent it from separating or panting under the longitudinal stresses likely to be set up on the loaded vessel in a seaway. Plate hatch-covers extending over the whole length of the trunk may also be employed to contribute to this end. In certain cases the interior of the trunk will be altogether unobstructed; but if necessary strong tie-beams or girders can extend across it—say about amidships—at the level of the partial 'tween decks, these being protected from the action of the discharging-gear or from the cargo during loading by sloping transverse bulkheads or deflectors.

The vessel may have a longitudinal middle-line wall or bulkhead with a trunk or trunks on opposite sides of it.

The invention hereinbefore described is applicable to vessels—such as dumb barges, for instance—in which no engine is fitted.

In the accompanying drawings, which indicate one form in which my invention may be carried into effect, Figure 1 is a vertical longitudinal section of a vessel, with the engines and boilers in the stern, adapted for carrying ore. Fig. 2 is a deck plan of the same vessel, and Fig. 3 is an amidships cross-section.

The actual building details shown in the drawings may be considerably varied without departing from the spirit of the invention, which, however, they will serve to render clear.

Like letters indicate like parts throughout the drawings.

A represents the trunk or hopper, having continuous vertical and parallel side walls and which, as shown by Figs. 1 and 3, is entirely open and accessible, though it may, if desired, be provided with fixed or removable hatch-ties B, as indicated in Fig. 2.

From Fig. 3 it will be appreciated that the vessel is provided with a double bottom C of ordinary construction, but that the sides H are of exceptional strength and thickness, a large space being left between the skin-plating D and the trunk-bulkhead E, this space being stiffened by heavy beams F and thick deck-plating, stringers, brackets, &c. The double sides thus constructed are, as before stated, intended to be sufficiently strong



in themselves to sustain all local stresses likely to be brought upon them. The wing-spaces between the walls D and E may be divided up into tanks or other receptacles, which may, 5 if desired, be utilized to contain water-ballast, which may be carried at any desired height. These spaces may be used for goods more easily handled than the ore—measurement goods, for example—or may be otherwise 10 wise utilized.

According to the requirements of the particular vessel the special heavy hatch-ties G, whether permanent or removable, may or may not be employed. The hatch-ties, how- 15 ever, are so placed or some or all of them are made removable, so as not to interfere with the trunk-space, which is clear of obstructions and, as shown in Fig. 3, has vertical side walls, so that none of the cargo in the trunk will lie 20 underneath any overhanging portion of the structure, and is therefore quite accessible when it is required to remove it. From this construction it results that in unloading the cargo the discharging-bucket or other appa- 25 ratus can pass up the vertical side walls of the hold without meeting any overhanging

obstruction, so that any cargo lying close against these side walls can be readily got at. It will be seen, also, that the side walls of the hold being parallel throughout their length 30 (see Fig. 2) the hatchway-coamings may be utilized as rails for a traveling discharging apparatus, or rails may be secured to the deck beside these coamings, so that the apparatus may travel without interruption from end to 35 end of the cargo-space.

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

A cargo vessel having the double sides and bottom, and a central longitudinal trunk or 40 hold unobstructed from front to rear, and having vertical side walls parallel throughout their entire length and unobstructed from bottom to top; substantially as and for the purpose set forth. 45

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES CAMPBELL.

Witnesses:

A. STEAD,

W. G. WILSON.

## DISCLAIMER.

675,812.—*James Campbell*, London, England. NAVIGABLE VESSEL. Patent dated June 4, 1901. Disclaimer filed February 21, 1908, by patentee.

Enters his disclaimer—

“To those parts of the specification which are in the following words, which your petitioner desires to erase from said specification: Lines 68 to 73, inclusive, on page 1 of said specification as printed by the Patent Office, being the following words, to wit:

“The vessel may have a longitudinal middle line wall or bulkhead with a trunk or trunks on opposite sides of it.

“The invention hereinbefore described is applicable to vessels—such as dumb barges, for instance—in which no engine is fitted.”—[*Official Gazette, March 3, 1908.*]