No. 670,225. Patented Mar. 19, 1901.

J. GAYLEY.

SHIP CONSTRUCTION.

(Application filed Oct. 5, 1900.

(No Model.) 4 Sheets—Sheet 1.

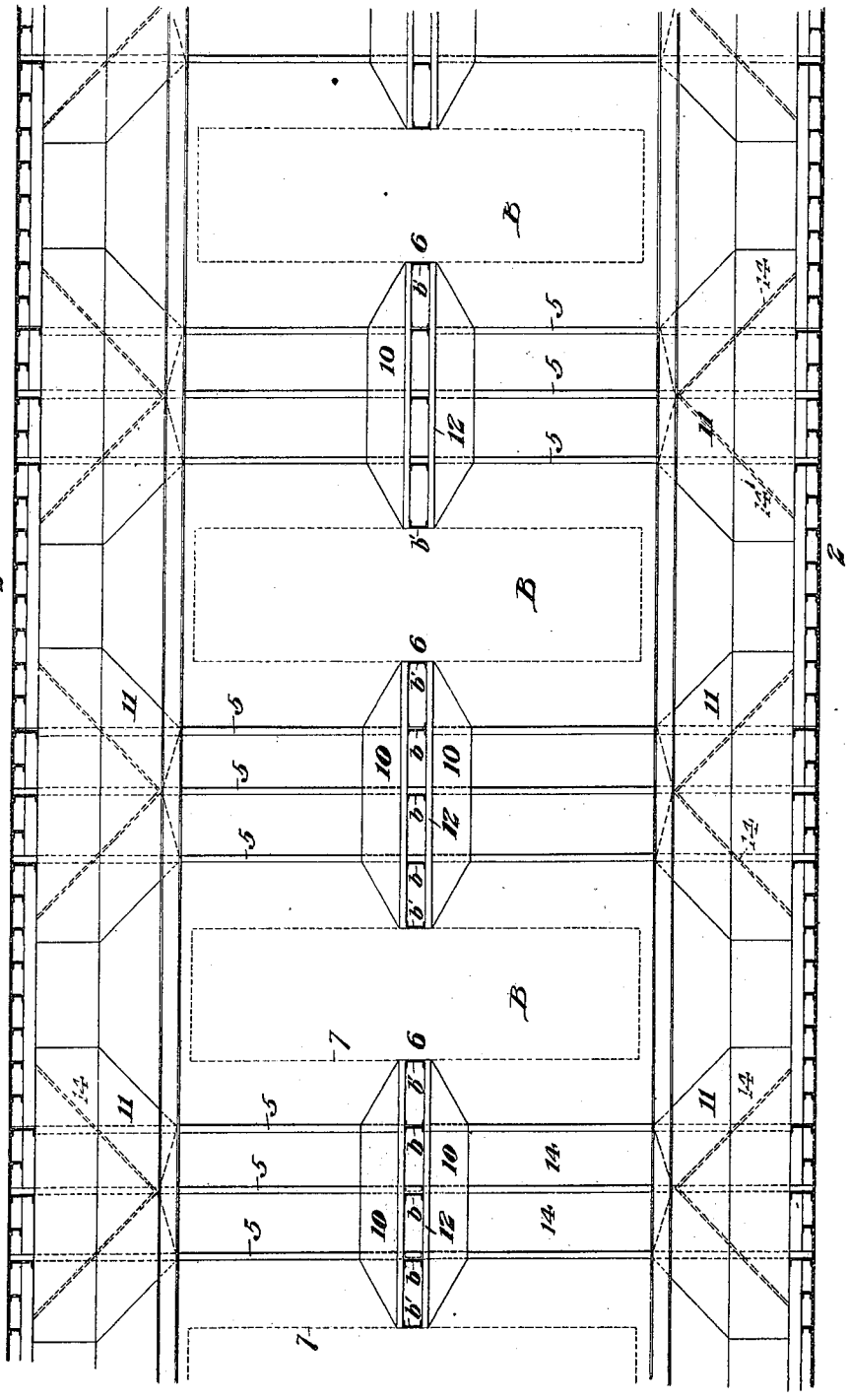


Fig. 1.

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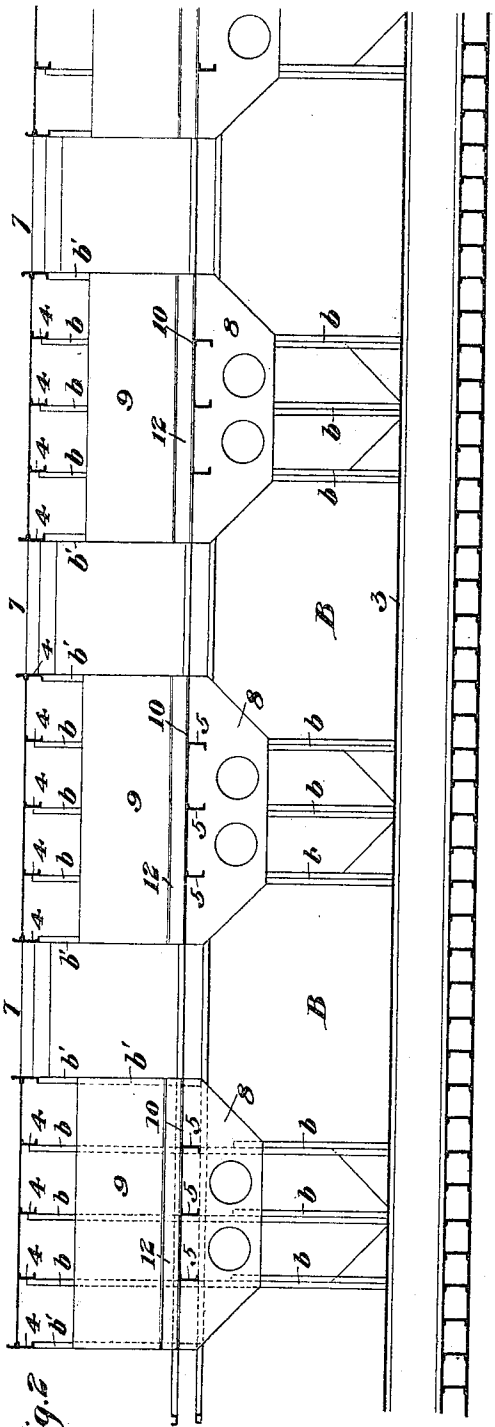


Fig. 2.

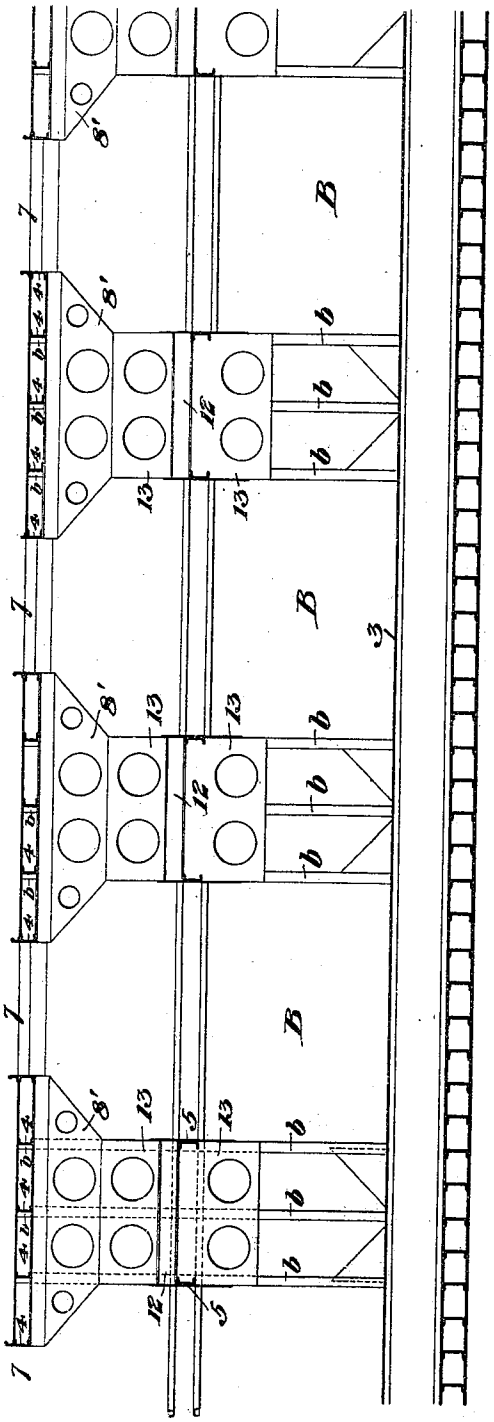


Fig. 3.

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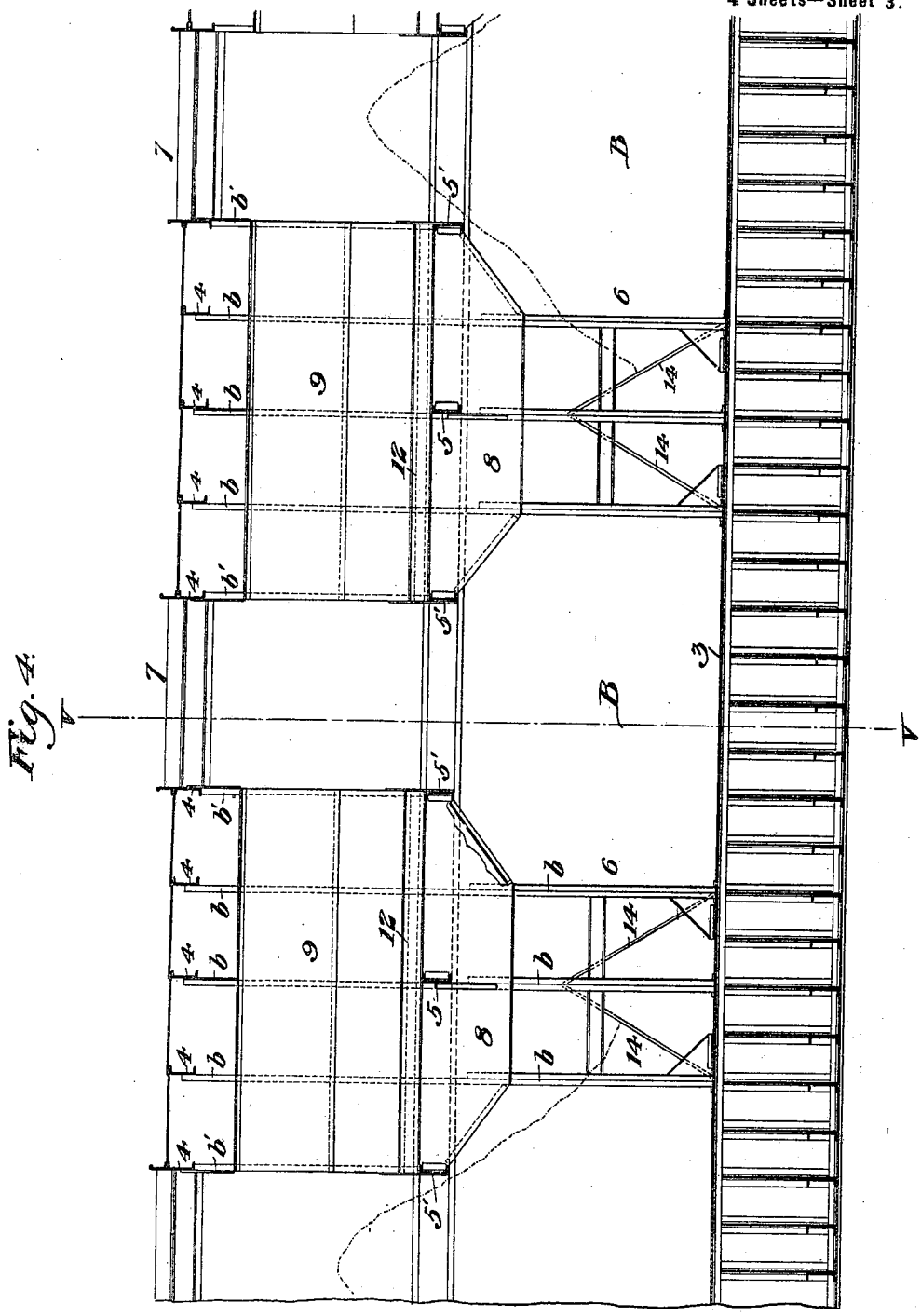


Fig. 4.

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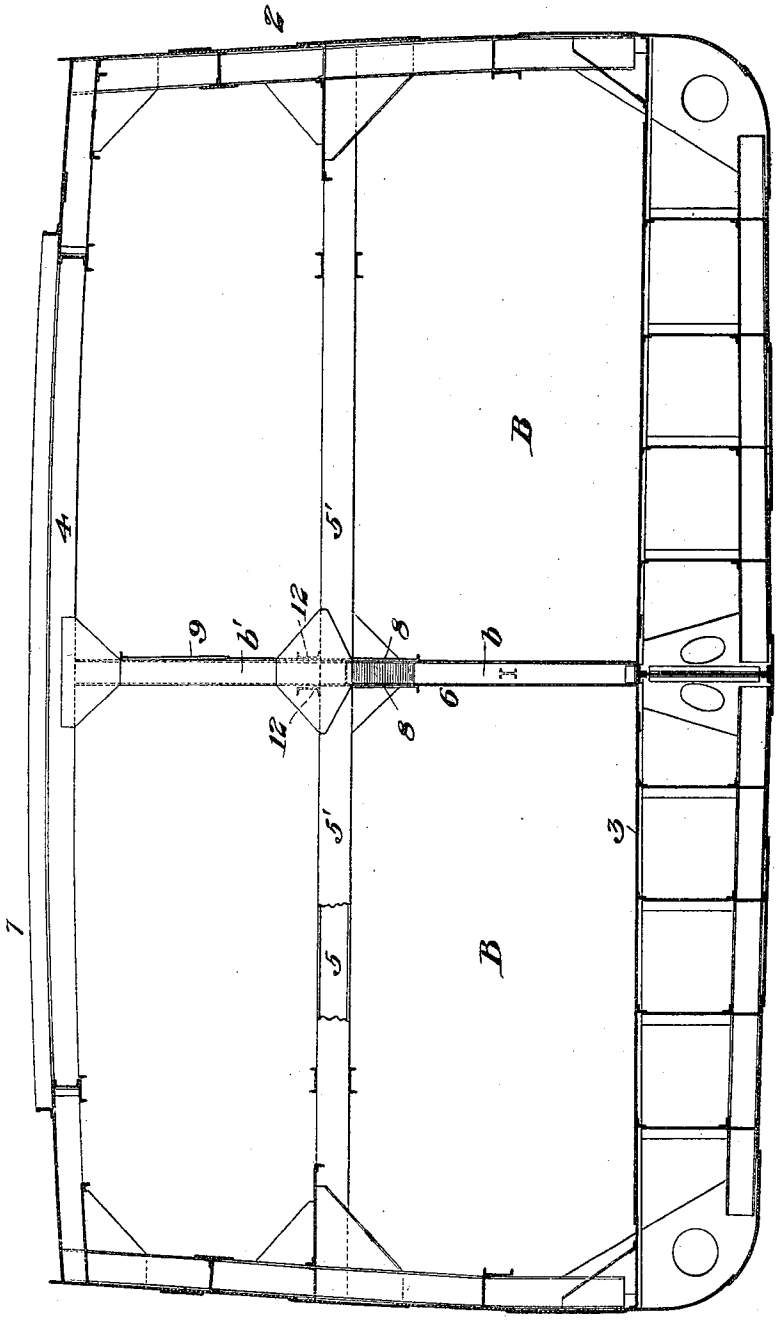
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Fig. 5.



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UNITED STATES PATENT OFFICE.

JAMES GAYLEY, OF PITTSBURG, PENNSYLVANIA.

SHIP CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 670,225, dated March 19, 1901.

Application filed October 5, 1900. Serial No. 32,125. (No model.)

To all whom it may concern:

Be it known that I, JAMES GAYLEY, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Ship Construction, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a sectional plan view of a ship constructed in accordance with my invention. Fig. 2 is a longitudinal central section of the same. Fig. 3 is a view similar to Fig. 2, showing a modified construction of the deck-supports. Fig. 4 is a view similar to Fig. 2, on a larger scale, showing another modification of the invention. Fig. 5 is a cross-section on the line V V of Fig. 4.

The construction of ships for carrying heavy material, such as ore, is a matter of very considerable importance. The ship must be of great strength in order to resist the strains put upon it by the weight of its cargo within and by the impact of the waves from without, and yet sufficient space must be afforded in the hold for the reception and handling of the cargo. The purpose of my invention is to effect both of these objects by means which are simple and which will produce a strong and effective ship construction.

In Figs. 1, 2, and 5 of the accompanying drawings, 2 represents the hull of the ship, and 3 is the floor-line at the bottom of the hold. 4 indicates the deck-beams, and 5 5 are intermediate deck-beams, which extend across the hold from side to side of the vessel. 6 6 are the deck-supports, which extend in line with the keel from the bottom of the vessel to the deck-beams. They are composed of vertical members *b b*, arranged beneath the portions of the deck, which are between the hatches, and they extend downwardly from the deck-beams 4; but instead of having members extending directly from the coamings of the hatches to the bottom of the vessel I extend the outer vertical members *b' b'* only to the intermediate deck-beams 5, and from that point downwardly the deck-supports are composed of the intermediate members *b b b*, which are in the spaces between the hatches. The effect of this is to set back the deck-supports from the vertical planes of the hatch-coamings. 8 and 8' are cantaliver gusset-plates, which connect the members of the deck-supports and carry the deck-beams either directly, as shown at 8' in Fig. 3, or through additional members *b' b'*, which in turn carry the deck, as shown in Fig. 2. 9 is a plate which is fixed to the members *b* and *b'* and serves to prevent lateral shifting of the cargo when light material, such as grain, is carried in the vessel. For a like purpose removable shutters may be placed between the stanchions *b' b'*, connecting the plates 9 9 after the vessel has been loaded. The deck-supports are strengthened and connected with the intermediate deck-beams by horizontal gusset-plates 10 10, and at the ends of the intermediate deck-beams there are other horizontal gusset-plates 11 11, which connect these intermediate deck-beams with the side of the vessel. They make it possible to dispense with the additional deck-beams heretofore employed in the vertical planes of the hatch-openings and impart great rigidity to the vessel, rendering it strong and staunch. The members *b* and *b'* of the deck-supports are further connected by channel-beams 12, which extend horizontally across the same and are riveted thereto.

With the construction above described there is afforded a large open space B, extending beyond each side of the hatch at the middle of the vessel at the places heretofore commonly occupied by stanchions, and as there are no intermediate deck-beams under the coamings of the hatches a very wide space is afforded for the introduction of unloading-machines, which can move about without interference, and can thus perform readily the work of unloading the vessel, shoveling of the cargo in the hold being to a large extent rendered unnecessary.

In the construction shown in Fig. 3 the members *b' b'* of the deck-supports are omitted and the support is constituted by the three members *b b b* solely, being connected at the top by a cantaliver gusset-plate 8' and below the same by plates 13, which do not extend beyond the limit of the members *b b*. In this construction, as in the construction above described, there are no intermediate deck-beams under the coamings of the hatch and no vertical members extending in the planes of the coamings of the hatch down to

the bottom of the vessel, so that a large space B is afforded for the purpose above mentioned.

In Figs. 4 and 5 I show a construction which is similar to that of Fig. 2, except that there are intermediate deck-beams 5' directly below the coamings of the hatch. This is not as desirable as the construction shown in Fig. 2, but it possesses the advantages afforded by the absence of vertical members extending from the coamings of the hatch to the bottom of the vessel. In this figure I also show inclined plates 14, extending from the middle of the deck-supports crosswise of the vessel in each direction, which serve to deflect the cargo outwardly from the middle of the deck-supports toward the center of the space B, so as to keep the cargo during unloading in the path of the unloading-machine. I also prefer to employ deflectors 14' for a like purpose at the sides of the vessel.

Within the scope of my invention modifications may be made by those skilled in the art. For example, in place of the gusset-plates which I have shown I may use latticed girders, and like modifications may be made in the construction of the intermediate deck-beams, for which braces of various designs may be substituted.

I claim—

1. In a ship construction, the combination of deck-supports composed of vertical members extending from the deck-beams to the bottom of the vessel at points intermediate between the hatches and set back therefrom; and intermediate deck-beams; the deck-supports being shaped to afford an enlarged space between and below the hatches; substantially as described.

2. In a ship construction, the combination of deck-supports composed of vertical members extending from the deck-beams to the bottom of the vessel at points intermediate between the hatches and set back therefrom; intermediate deck-beams; and gusset-plates by which the deck-supports are connected to the intermediate deck-beams, the deck-supports being shaped to afford an enlarged space between and below the hatches; substantially as described.

3. In a ship construction, the combination of deck-supports composed of vertical members extending from the deck-beams to the bottom of the vessel at points intermediate between the hatches, and set back therefrom; intermediate deck-beams; the deck-supports being shaped to afford an enlarged space between the hatches and below the deck-beams; and horizontal gusset-plates at the ends of the intermediate deck-beams; substantially as described.

4. In a ship construction, the combination of deck-supports composed of vertical members extending from the deck-beams to the bottom of the vessel at points intermediate between the hatches and set back therefrom; intermediate deck-beams; the deck-supports being shaped to afford an enlarged space between the hatches and below the deck-beams; all of the intermediate deck-beams being situated at points intermediate between the hatches and set back therefrom, and there being a free space at the level of the intermediate deck-beams immediately under the coamings of the hatches, and extending back to the vertical members of the deck-supports; substantially as described.

5. In a ship construction the combination of deck-supports composed of vertical members extending from the deck-beams to the bottom of the vessel at points intermediate between the hatches and set back therefrom; intermediate deck-beams; the deck-supports being shaped to afford an enlarged space between the hatches and below the deck-beams, and vertical gusset-plates 8, 8' extending lengthwise of the vessel and connecting the members of the deck-supports; substantially as described.

In testimony whereof I have hereunto set my hand.

JAMES GAYLEY.

Witnesses:
G. I. HOLDSHIP,
THOMAS W. BAKEWELL.