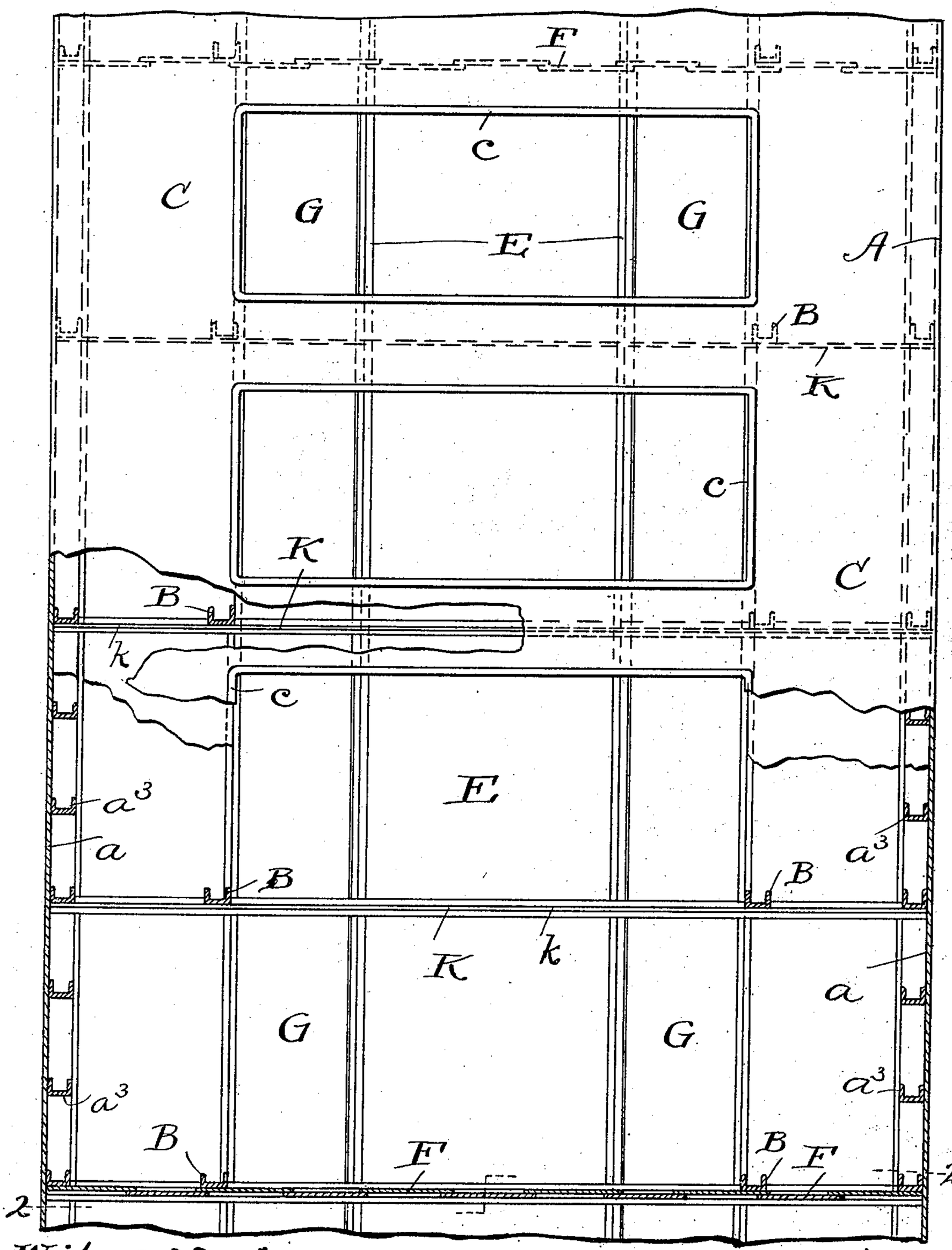
No. 754,107. PATENTED MAR. 8, 1904.

A. B. WOLVIN.

SHIP CONSTRUCTION.

APPLICATION FILED AUG. 15, 1903.

NO MODEL. 2 SHEETS—SHEET 1.



Witnesses.
E. B. Gilchrist
N. L. Pierson.

Fig. 1.

Inventor
Augustus B Wolvin
By his attorneys
Thurston & Bates

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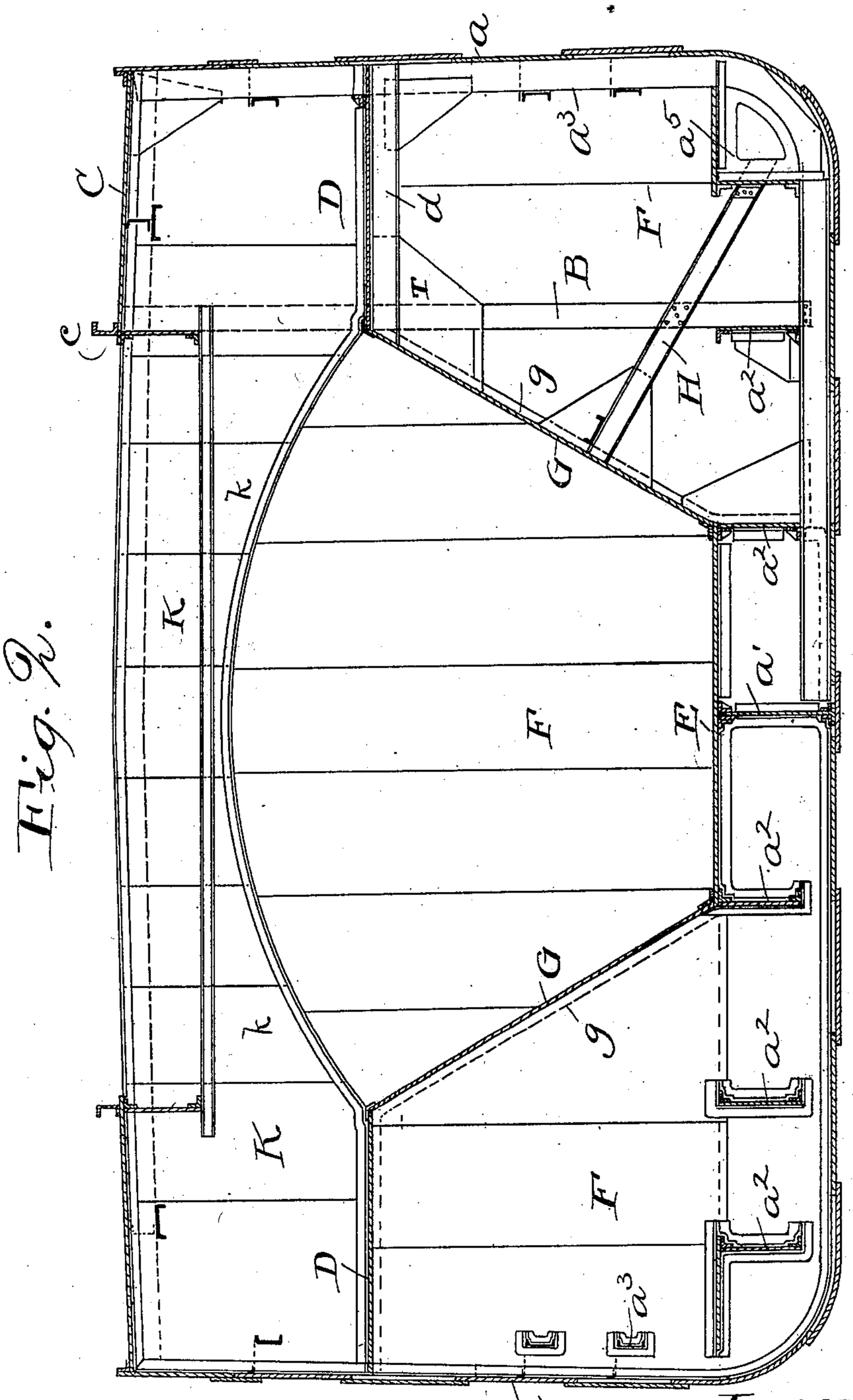

Fig. 2.

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UNITED STATES PATENT OFFICE.

AUGUSTUS B. WOLVIN, OF DULUTH, MINNESOTA.

SHIP CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 754,107, dated March 8, 1904.

Application filed August 15, 1903. Serial No. 169,616. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS B. WOLVIN, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented a certain new and useful Improvement in Ship Constructions, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to the construction of steel ships designed for the ore-carrying trade on the Great Lakes, and particularly adapted to modern appliances employed therein.

The ore-receiving docks on the lower lakes are in most cases provided with ponderous unloading machinery, and it will probably not be long before all of the important ore-receiving docks are similarly equipped. These automatic unloading mechanisms, of which there are several varieties, have this common characteristic—viz., they all have scoops or buckets which are lowered through the hatchways into the hold of the ship where they automatically fill themselves with ore and lift it out and discharge it into cars or onto an ore pile. These unloading machines, however, can only pick up the ore which is directly below the hatchways. It is therefore necessary with ships as heretofore constructed to have men or men and mechanism in the hold to shovel or scrape into position beneath the hatchways that ore which lies on either side thereof.

The primary object of my invention is to so construct an ore-carrying ship that substantially the entire cargo of ore will lie or automatically flow into positions where the unloading mechanism may pick it up, wherefore the employment of any considerable labor in the hold to move the ore into such position may be dispensed with.

Another object is to so construct the ship that the unloading machinery cannot seriously injure any part thereof which may be struck through careless manipulation.

In the ore-carrying trade on the Great Lakes it is generally most profitable for the ships to carry a cargo of ore down and to run light on the return trip, the saving thereby being more valuable than the possible freight earnings on an up-bound cargo. In order that these ships may go up the lakes light and without any great danger, modern ships are provided with water-tight compartments, into which water is taken to serve as ballast. Such water-tight compartments, as heretofore constructed, cannot be of sufficient capacity to render the ships carrying a water ballast stable without encroaching too greatly on cargo space, and as a consequence water ballast is often carried in the hold which obviously has a tendency to make the ship unstable, and while it is not known that any have actually "turned turtle" under these conditions lives of the crew are endangered and the ships are racked and strained to a greater or less degree.

Another object of this invention is to provide a construction for ships which when their water-compartments are filled will render the ships much more stable and seaworthy than they are at present.

The invention may be said to consist in the construction and combination of parts hereinafter described, and pointed out definitely in the claims.

In the drawings, Figure 1 is a plan view of such part of the ship embodying the invention as lies between the two adjacent bulkheads, and Fig. 2 is a transverse section of the same on the bent line 2 2.

Referring to the parts by letters, A represents the hull of the ship. This hull may be of familiar construction, and it includes the external walls a, its internal frames a^3, its center keelson a', and its longitudinal frame members a^2.

B represents upright stanchions which are supported upon the longitudinals a^2 and serve to partially support the spar-deck C and the inner edge of the shelf-like main-deck D, whose beams d are secured to said stanchions and to the frames a^3. Hatchways c are formed through the spar-deck, and in order to best adapt the ship to be loaded at docks provided with modern loading appliances the distance between the hatch-centers is twelve feet. This distance may of course be varied, if desired. At suitable intervals bulkheads F extend entirely across the ship from one side to

the other, being secured to the frames a^3. In the respects above referred to the ship shown is of familiar construction.

The floor E of the hold is secured upon the keelson a', and longitudinals a^2 extend, preferably, not more than eight or ten feet on each side of the center keelson a', so that its edges lie inside a plumb-line dropped from the side edges of the hatchway c. Extending from the side edges of this floor upward and outward and joining with the inner edges of the shelf-like main-deck D are the inclined partitions G, which extend longitudinally between adjacent bulkheads. These inclined partitions are braced and supported by channel-bars g, secured to their outer faces and to the longitudinal a^2 and to the stanchions B or main-deck beams d, or both, by gusset-plates T. These partitions and these supporting-beams are strengthened by struts H, which are secured to said beams and to brackets a^5, secured to the frames near the bilge. The spreading apart of the upper ends of these inclined partitions G is still further provided against by means of arch-shaped girders K, which extend across the ship between the hatches and are secured to the main-deck and frame members. These girders are connected to and strengthened by plates k, whose upper ends are secured to the spar-deck beams.

It will be noted that the cargo-carrying hold is a trough-like structure having outwardly-flaring walls and that said hold is located in the longitudinal center of the ship. The sides of the floor of this hold do not extend as far toward the sides of the ship as do the hatchways, wherefore any unloading device which can pass through the hatchways can easily reach the side limits of this floor. The sides have such a degree of inclination that as the ore is removed from the floor that which is resting against the sides will slide down onto the floor. The unloading machinery may therefore automatically scoop up the entire cargo, except perhaps some small part which remains between the hatchways. By making the distance between adjacent fore and aft edges of these hatchways short the quantity of the load which the unloading mechanism cannot reach is exceedingly small. Moreover, the unloading mechanism cannot strike any part of the ship below the main-deck excepting only the floor, the inclined side partitions, and the bulkheads, all of the supporting structure being outside of these parts and protected thereby. Careless handling of the unloading machinery can therefore do very little damage to the ship. This is a very desirable characteristic, because the ships as heretofore constructed are often seriously damaged by the unloading machinery.

All of the space within the hull and below the main-deck, but outside of the trough-like hold, may be utilized for holding water ballast. The joints between the inclined side partitions and the floor should be water-tight to prevent water from entering the hold. The center keelson or one or more of the longitudinals a^2 may be extended down to the hull, and thereby serve as a longitudinal partition to prevent the water from flowing from one side of the ship to the other. The balance of the ship will not in such construction be disturbed by the flow of an excess of water on either side of the center keel, where the ship rocks. These water-compartments are more capacious than any which are found in ships as heretofore constructed, and therefore the ship may carry a greater quantity of water ballast, which will give the ship a proportionately greater stability.

Having described my invention, I claim—

1. A steel ship having an unobstructed trough-shaped cargo-hold, which is located midway between the sides of the ship, and which has a floor which does not extend as close to the sides as do the hatchways, and which has outwardly-flaring side walls extending from the floor to the main-deck, substantially as and for the purpose specified.

2. A steel ship having a plurality of keelsons, a floor laid thereon, a shelf-like main-deck extending inward from the sides of the ship, and longitudinally-extended partitions which are inclined outwardly from the floor to the edges of said main-deck, substantially as and for the purpose specified.

3. In a ship construction, the combination with a hull, of side frames, and a plurality of keelsons, vertical stanchions, main-deck beams secured to said stanchions and side frames, a floor secured upon the keelsons and longitudinally-extended partitions which are outwardly inclined from the floor to the inner edges of said main-deck, and are located wholly between the stanchions and the center of the ship, substantially as and for the purpose specified.

4. A steel ship having an unobstructed trough-shaped cargo-hold which is located midway between the sides of the ship and is provided with outwardly-flaring side walls which extend upward from the floor, brace-bars secured to the outer sides of said side walls, and inclined outwardly-extended struts secured to said bars and to the hull, substantially as and for the purpose specified.

5. In ship construction, the combination of a hull having interior side frames, and a plurality of keelsons, vertical stanchions supported upon said keelsons, main-deck beams secured to said stanchions and frames, and deck-plates secured upon said beams, with the floor secured upon said keelsons, and outwardly-inclined partitions extending from the floor to the main-deck, substantially as and for the purpose specified.

6. In ship construction, the combination of

a hull having interior frame members, and a plurality of keelsons, vertical stanchions, main-deck beams secured to said frames and stanchions, deck-plates upon said beams, and bulkheads secured at intervals to said frames and extending across the ship, with a floor secured upon said keelsons, and outwardly-inclined partitions extending from the floor up to the main-deck and extending longitudinally from one bulkhead to another whereby there is formed in the center of the ship an unobstructed trough-like cargo-hold extending from one bulkhead to another and containing no supports or obstructions to interfere with the work of unloading mechanism therein, and whereby there is formed outside of said hold water-ballast compartments, substantially as and for the purpose specified.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

AUGUSTUS B. WOLVIN.

Witnesses:

R. M. WOLVIN,

JOHN FLYNN.