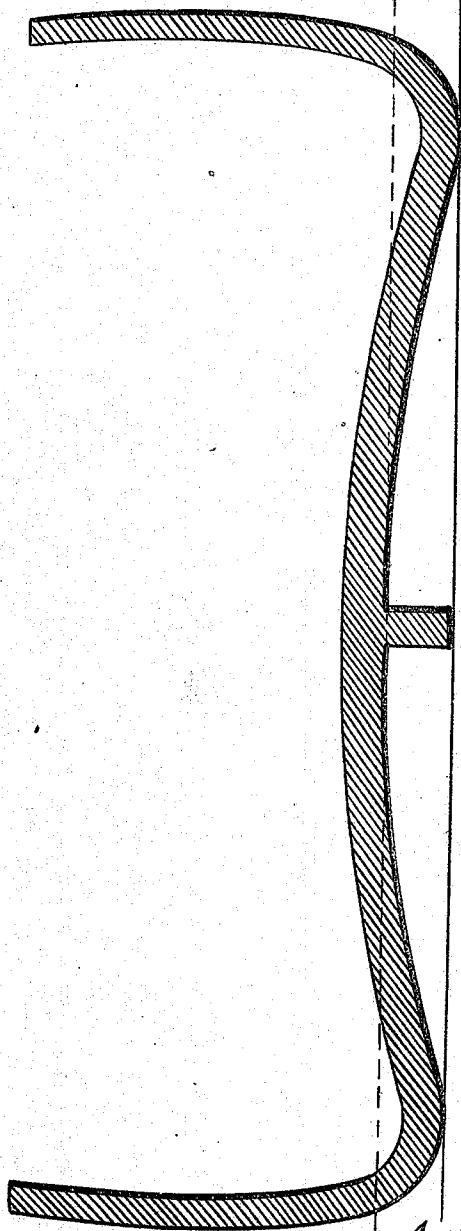


J. W. Griffiths.

Form.

Nº 35,232.

Patented May 13, 1862.



Witnesses:

*J. W. Coombs
C. S. Spencer*

Inventor.

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per m. H. Co.
Attorneys.*

UNITED STATES PATENT OFFICE.

JOHN W. GRIFFITHS, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN NAVIGABLE VESSELS.

Specification forming part of Letters Patent No. 35,232, dated May 13, 1862.

To all whom it may concern:

Be it known that I, JOHN W. GRIFFITHS, of the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Ships and other Navigable Vessels for Sea, River, or Lake Service; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification.

My invention relates to an improved form of the transverse sections of the midship-bodies of vessels. In order the better to enable its nature and effect to be understood and appreciated, I will explain the defects of the form heretofore commonly adopted. That form bears so near a resemblance to the form of the concavity between the waves of the sea as to encourage or facilitate a transverse or rolling motion when the vessel is exposed to the action of waves, even with the most equitable distribution of weights in freight or cargo; and indeed it would seem as though this quality had been regarded as an essential element in the utility or safety of vessels, else so much care had not been evinced in adapting the form of the fabric to the exactitude of that oscillating hydraulic balance which sustains the wave and at the same time operates as an element of destruction to the vessel.

It is impossible in the present formation of midship-bodies to incorporate any system of distribution in the weights of cargo which will materially relieve merchant-vessels from the pendulous motion so straining to the fabric, while the buoyancy is diminished at the very place where the weights have been found to be most effective—viz., the sides and bilge. For example, it is known that if the coals in a steam-vessel be used first from the ends of the vessel or directly in line with or over the keel, while that in the sides or bilge of the

vessel remains, the vessel rolls less. Her pendulous motions are less frequent and do not extend so far on either side, and the reverse is equally true. This is a well-defined law in reference to weight, and it is equally well established that the stability of vessels increases as the cube of the breadth; hence it may be assumed that the stability of the vessel is increased when the buoyancy is increased at the greatest breadth without increasing the extreme width of the vessel, and it is upon this assumption that I have founded my invention, which consists in compensating for the loss of buoyancy at the bilge consequent upon its rotundity by commencing the bilge lower down the sides and extending it below the usual base-line to any point not below the bottom of the keel, but below a horizontal line with the top of the keel, as is illustrated in the accompanying drawing, which represents a transverse section of the midship-body of a vessel constructed according to my invention. The form represented in the drawing may, however, be departed from to a very considerable extent without departing from the principle of my invention, which I consider to embrace any drop of the bottom below a horizontal line, *a a*, drawn across the top of the keel or flat of the bottom of the vessel; and

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

The construction of navigable vessels with a drop or downward extension of the bilge below a straight base-line at the midship cross-sections, substantially as herein shown and described, so as to compensate for the loss of buoyancy consequent upon the rotundity of the bilge, all as set forth.

JOHN W. GRIFFITHS.

Witnesses:

M. M. LIVINGSTON,
L. W. BENDRÉ.