

J. BETTELEY.

Construction of Ships.

No. 133,621.

Patented Dec. 3, 1872.

Fig. 1.

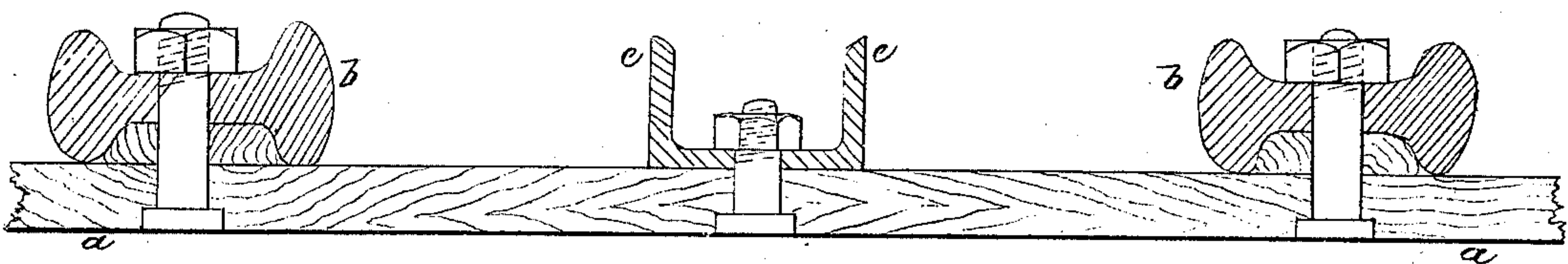


Fig. 2.



Fig. 6.

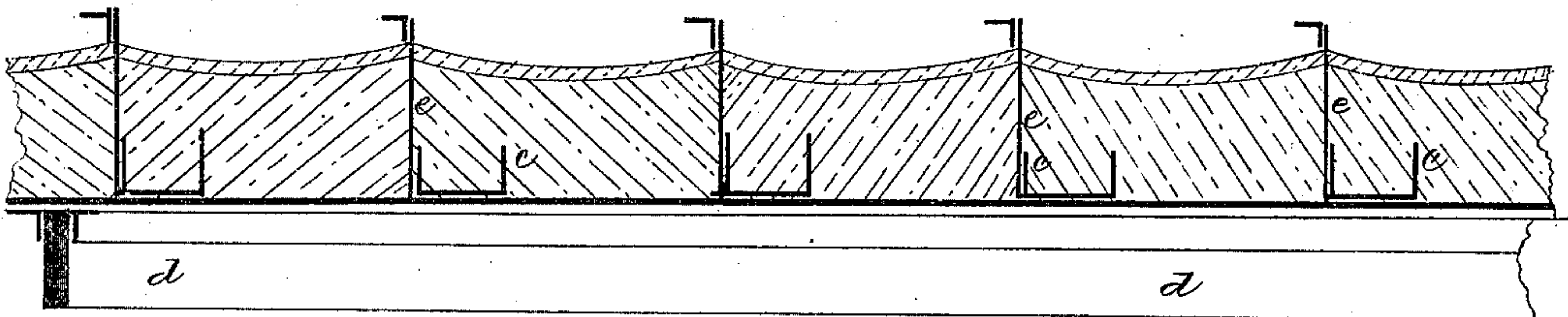
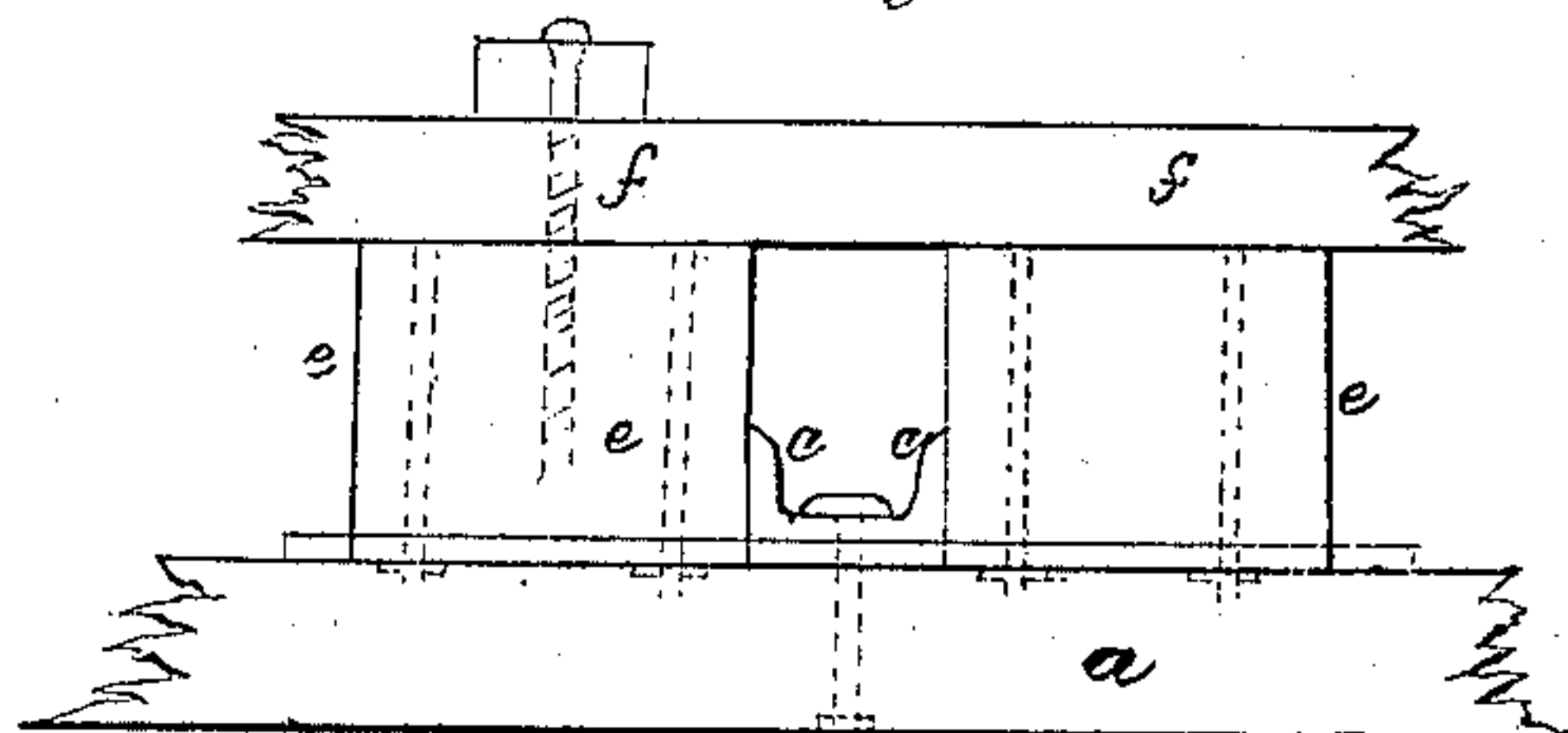


Fig. 8.



Witnesses:

Wm. J. Peyton.
A. H. Morris.

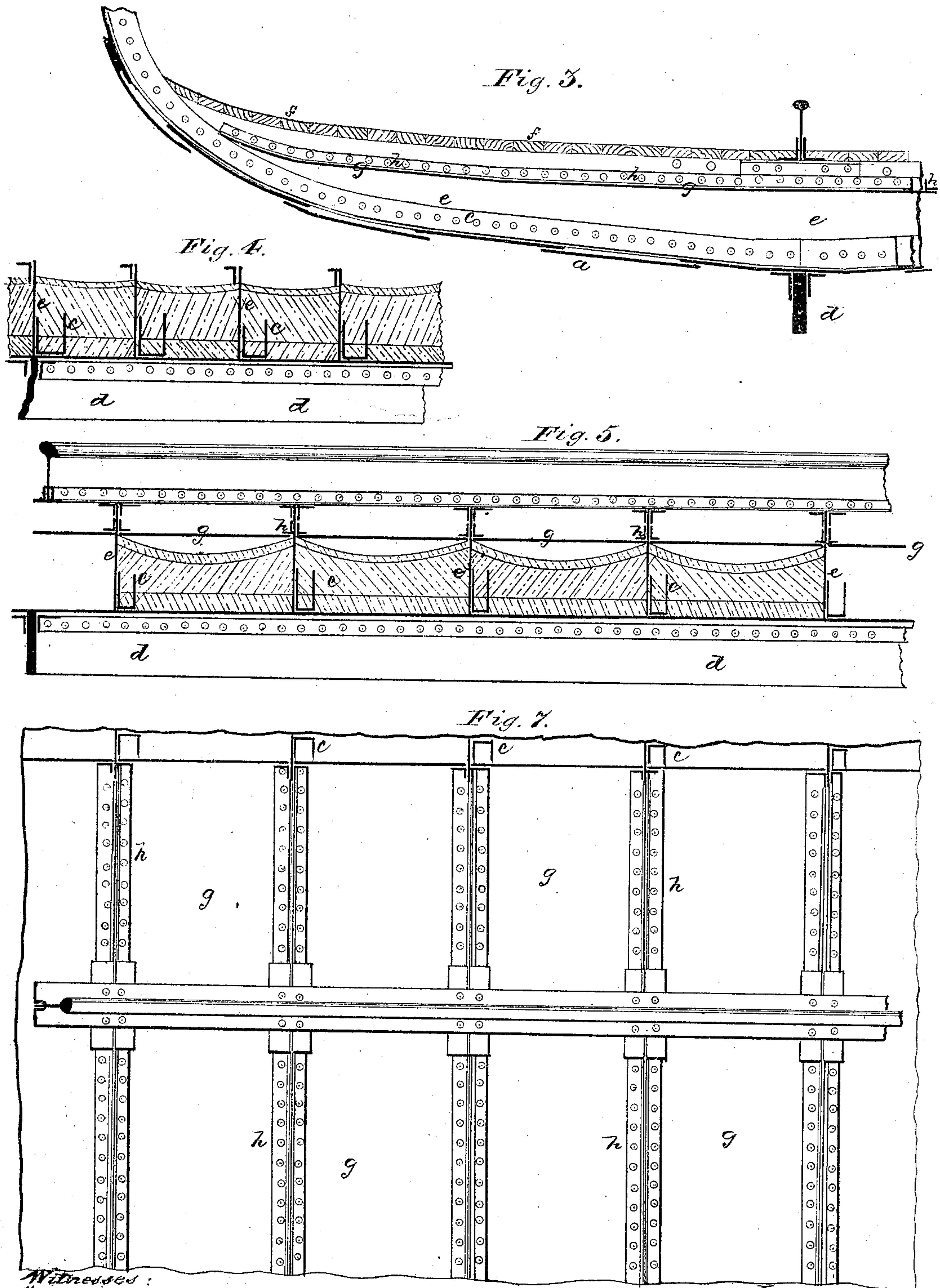
Inventor:

Joseph Betteley.
By James L. Morris.
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UNITED STATES PATENT OFFICE.

JOSEPH BETTELEY, OF LONDON, ENGLAND.

IMPROVEMENT IN CONSTRUCTION OF SHIPS.

Specification forming part of Letters Patent No. 133,621, dated December 3, 1872.

To all whom it may concern:

Be it known that I, JOSEPH BETTELEY, of London, England, have invented or discovered certain new and useful Improvements in the Construction of Ships or Vessels; and I do hereby declare that the following is a full, true, and exact description thereof, reference being had to the drawing hereunto annexed; that is to say—

These improvements relate, first, to the construction of the hulls of iron or steel and of composite ships or vessels; and consist, first, in the employment of metal bars double flanged on one or both sides for the vertical frames, the bars being carried down to the keel to which they are bolted or to a plate laid thereon, these bars having riveted to them the vertical floor-plates; secondly, to the employment of plates between the outside skin and the ceiling to form an additional bottom, such plates being secured to the floor-plates, the spaces below the plates serving to contain cement or a compound to act as permanent ballast, or not, as desired.

The invention is carried out in the following manner, whereby the vessels are, first, of general greater strength; second, less liable to become injured by grounding or lodging on rocks or dangerous shoals; third, they are rendered more compact and more efficient to withstand the wear and tear of long sea voyages, and also the shocks and concussions in rivers and docks.

Figure 1 of the accompanying drawing represents a piece of planking, *a*, with two forms of bars or ribs of which my vertical frames for ships are composed. One form of bar is flanged on both sides, as at *b b*, while the other form of bar is flanged on one side only, as at *c c*. Fig. 2 is a piece of plating or outer skin of an iron ship in which the second-described form of bars or vertical ribs *c c* is shown, either or both of which forms can be used in the same vessel, as desired. The vertical ribs forming the frame of the vessel are carried down to the keel *d*, as shown in Figs. 3, 4, 5, and 6, to which they are bolted direct, or to a plate laid thereon. The lower ends of the ribs *c c* have the floor-plates *e e* riveted to them, the upper parts of which floor-plates carry the ceiling *f* in the usual manner. Between the ceiling and the ship's bottom I fix intermediate plates *g g*, the plates being fastened to the floor-plates *e e* by angle-irons *h h*, as shown in Fig. 7, or by their ends being turned up for the purpose. The ends of the

intermediate plates *g* terminate at the turn of the bilge, as seen in Fig. 8, which is a view through the line *x x* of Fig. 3. The spaces between the bottom or outside plates *a a* and the intermediate plates *g g* may be filled in with cement, arched at the top, as shown in Figs. 4, 5, and 6; or they may be left empty, as desired. If they have cement in them the cement acts as a permanent ballast. The plates *g g* have tapped holes in them in which screw-bolts can be placed, which bolts can be temporarily removed when it is desired to ascertain the quantity of bilge-water upon the cement or in the spaces.

In some cases, where the intermediate plates run fore and aft in lieu of across the ship, I fix them on the top of the floor-plates *e e*, the turned-up ends of the plates which are riveted together serving for the ceiling to be placed on. The surface may, however, be made flush by a cement or compound, the thickness of which will be determined by the height of the turned-up ends.

In the case of composite ships—those that have iron vertical frames and wood outside planking and wood inside floors—I carry the bars or ribs (double flanged on one or both sides) down to the keel and bolt them direct thereto, using metal strips or fish-plates *m m* on the meeting-edges. In some cases where a wood outside planking is used I attach iron floor-plates to the ribs *c c* in lieu of using wood floors; and,

Having now described the nature of my invention, I claim—

1. The metal bars, double flanged on one or both sides for the reception of the vertical frames, these bars having riveted to them the vertical floor-plates, and carried down to the keel, to which they are bolted, as and for the purposes described.

2. Metal plates interposed between the outside skin and the ceiling to form an additional bottom, such plates being secured to the floor-plates, and the spaces between the plates being filled with cement to act as permanent ballast and to prevent the ingress of water, substantially as described.

In witness whereof I, the said JOSEPH BETTELEY, have hereunto set my hand this nineteenth day of August, one thousand eight hundred and seventy-one.

Witnesses: JOSEPH BETTELEY.

H. GARDNER,

S. M. DANIEL,

166 Fleet Street, London.