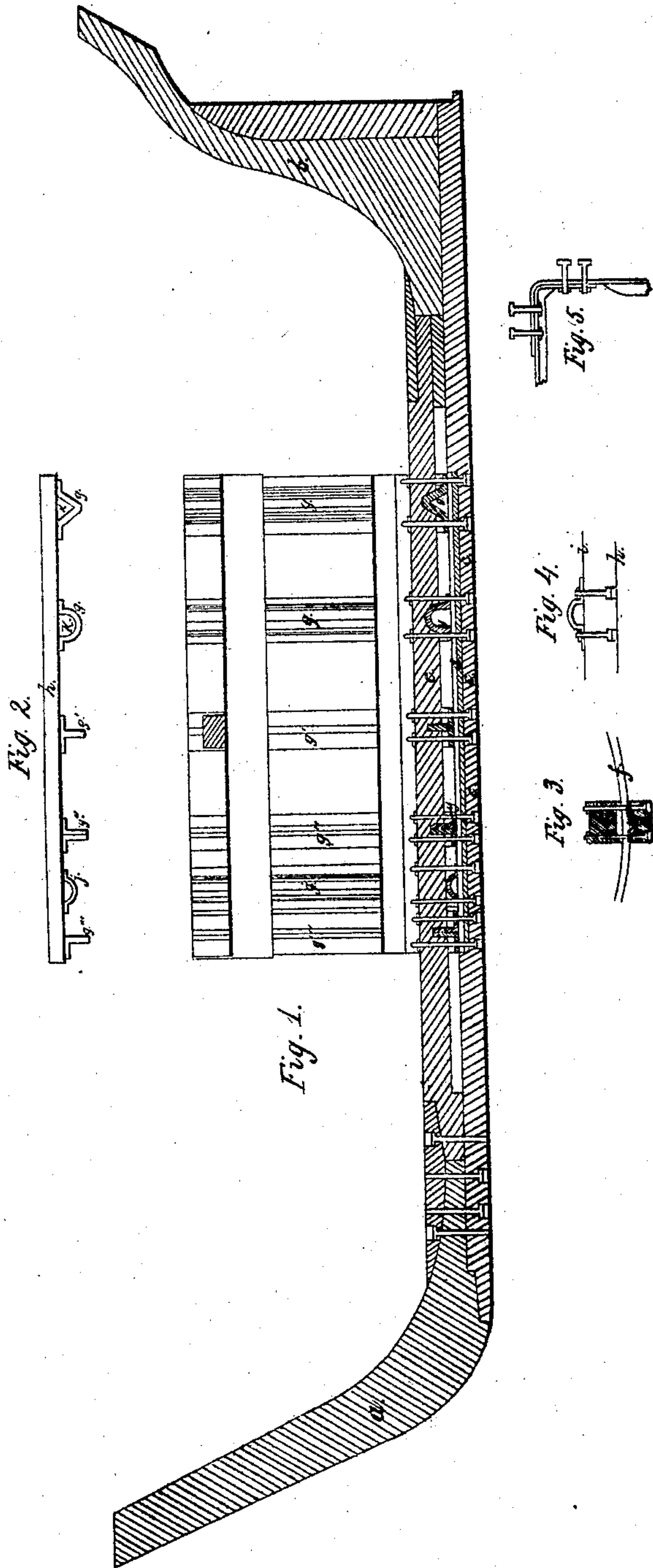


R. F. Loyer Building.

N^o 27,298.

Patented Feb. 28, 1860.



Witnesses,
A. L. Wilson
R. F. Loyer

Inventor,
R. F. Loyer

UNITED STATES PATENT OFFICE.

RICHARD F. LOPER, OF PHILADELPHIA, PENNSYLVANIA.

CONSTRUCTION OF SHIPS.

Specification of Letters Patent No. 27,298, dated February 28, 1860.

To all whom it may concern:

Be it known that I, RICHARD F. LOPER, of the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Constructing Steam Ships of War and All other Vessels; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters and marks thereon.

My invention relates to that method of constructing vessels whereof the whole, or a certain part only, of the frame is of metal and the planking and ceiling or other certain parts are of wood; and it has special reference to the metal used and the form of the pieces or parts, which are the substitutes for what are known in vessels constructed of timber as the ribs and knees, &c. and to the manner of securing these parts and the ceiling and planking to each other and together.

Of the drawings forming part of this specification, Figure 1, is a longitudinal section of a vessel's stern and stern posts, keel and keelson with a portion of the side timbers of the vessel shown; Fig. 2, being a top view of this portion of the side timbers and planking shown by Fig. 1. Fig. 3 is a vertical sectional view of the keel, keelson and floor, showing how the keel is made up of wood and metal and how, by bolts, these parts are connected together. Fig. 4, is a horizontal section of a strengthening or stiffening timber and a part of the side of the vessel, showing how such timber is secured to and together with the planking and ceiling, and Fig. 5, represents my manner of connecting the ends of timbers, standing at right angles to each other, by overlapping clamping flanges which are secured by bolts as shown.

In all of these figures the same marks and letters are used to indicate like parts.

As shown by the drawings *a* marks the stem post of wood; *b* the stern post, *c* the wooden portion of the keel, *d* the metal portion of the keel, *e* the keelson, *f* the floor, *g* the metal timbers, *h* the planking, and *i* the ceiling.

The material from which I make the timbers and strengthening pieces is what is usually called "composition." They may be made of what is known as Munte's metal or of any alloy of copper and zinc and tin, or

of copper and zinc. These timbers may be cast or rolled in one piece of the desired shape, or they may be made of two or more pieces their ends being connected by lap or other joints.

The strengthening pieces may be of copper and formed of the shape shown *j*, with holes in the flanged or flat parts for the bolts, or they may be made of cast or rolled metal as shown by *g'* *g''*, *g'''*, holes being formed through the portions of them needed for securing to them the wood work of the vessel.

For the ribs and knees and main timbers, as also for the keel I prefer the forms shown and marked *g*, *g* and *d* but other forms may be used providing a space be left as shown *k*, for admitting oil as well as for giving strength. This space *k* in the keel answers as a passage or receptacle for the bilge water.

I secure the metal parts and the wood parts of the vessel together by bolts, which pass through the flanges of the metal timbers, the planking, and the ceiling and are bound or held by nuts, as is shown by Fig. 4, the heads of the bolts being counter-sunk in the plank and covered by plugs of wood dipped in white lead. The same manner is used for binding together the keel, flooring and keelson, the bolts passing entirely through all the parts, secured interiorly by the nuts and the head countersunk and plugged.

Instead of the bolts and nuts, riveting spikes may be used, or what is known as the screw-spike or nail may be employed, so long as the mean or device for securing passes through all the metal and wood work and firmly binds all the parts together.

For securing the ends of timbers lying at right angles to each other I use the plan shown by Fig. 5 of the drawings, where, it will be seen, that the flanged end or extension plate of the one timber overlaps that of the other timber, the bolts passing through both of the plates and the wood work, as has been stated in relation to the parts shown by the other figures.

This plan of constructing steam ships-of-war is susceptible of being employed in the construction of other vessels and boats of any and every character and dimensions, the proportion of wood to the metal part being such as may be preferred, or as may be deemed most desirable having in view the special

use and purpose of the ship or vessel thus built. It is believed that a ship constructed on this plan will endure for a thousand years.

5 Having thus fully and clearly set out my invention, what I claim as new and desire to secure by Letters Patent is—

Constructing steam-ships-of-war and other vessels in part of wood and part of “com-

position” as here described, the parts of 10
“composition” being formed with the recesses and connected to the wood as herein set forth.

R. F. LOPER.

Witnesses:

A. HECHMAN,
R. L. WILCOX.