

P. EYERMANN.
SHIP BUILDING.

APPLICATION FILED JUNE 27, 1903.

NO MODEL.

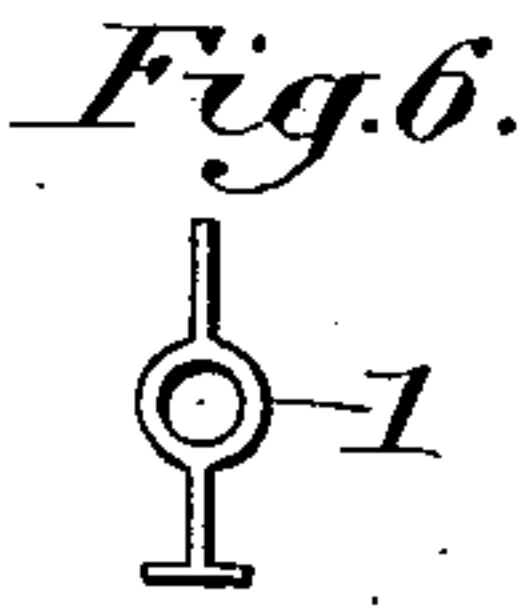
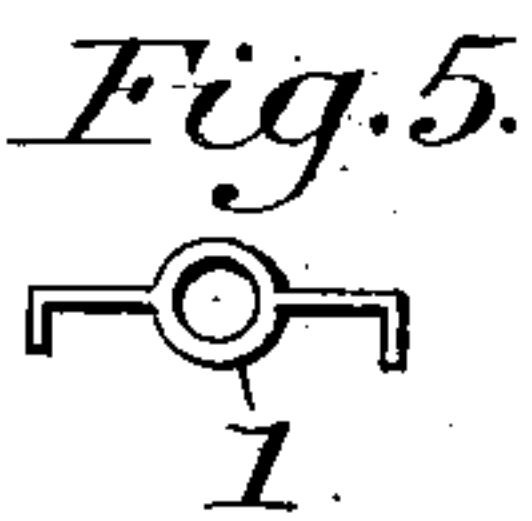
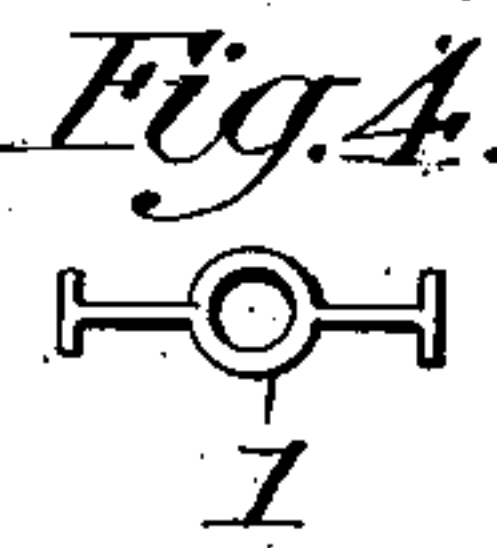
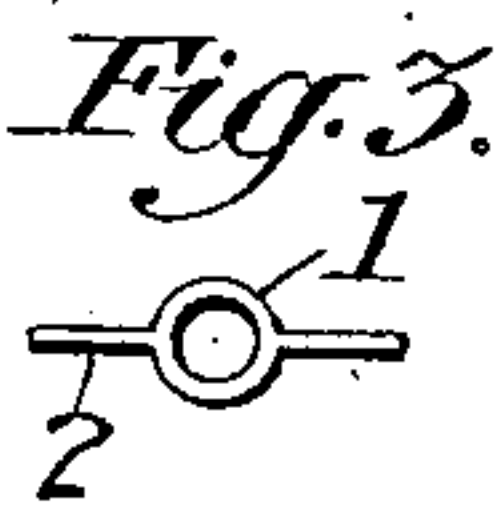
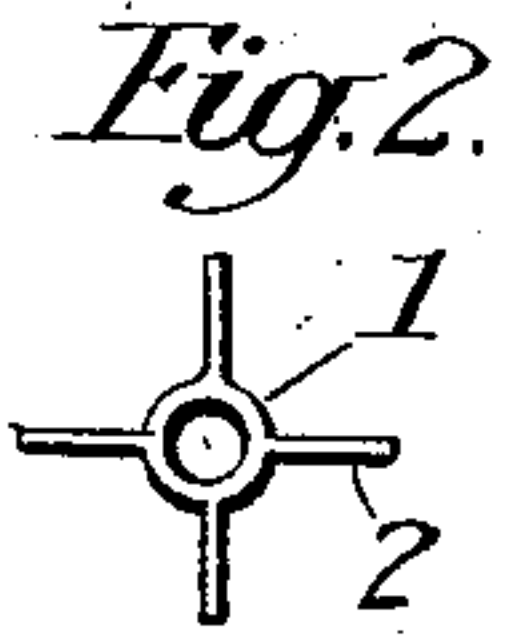
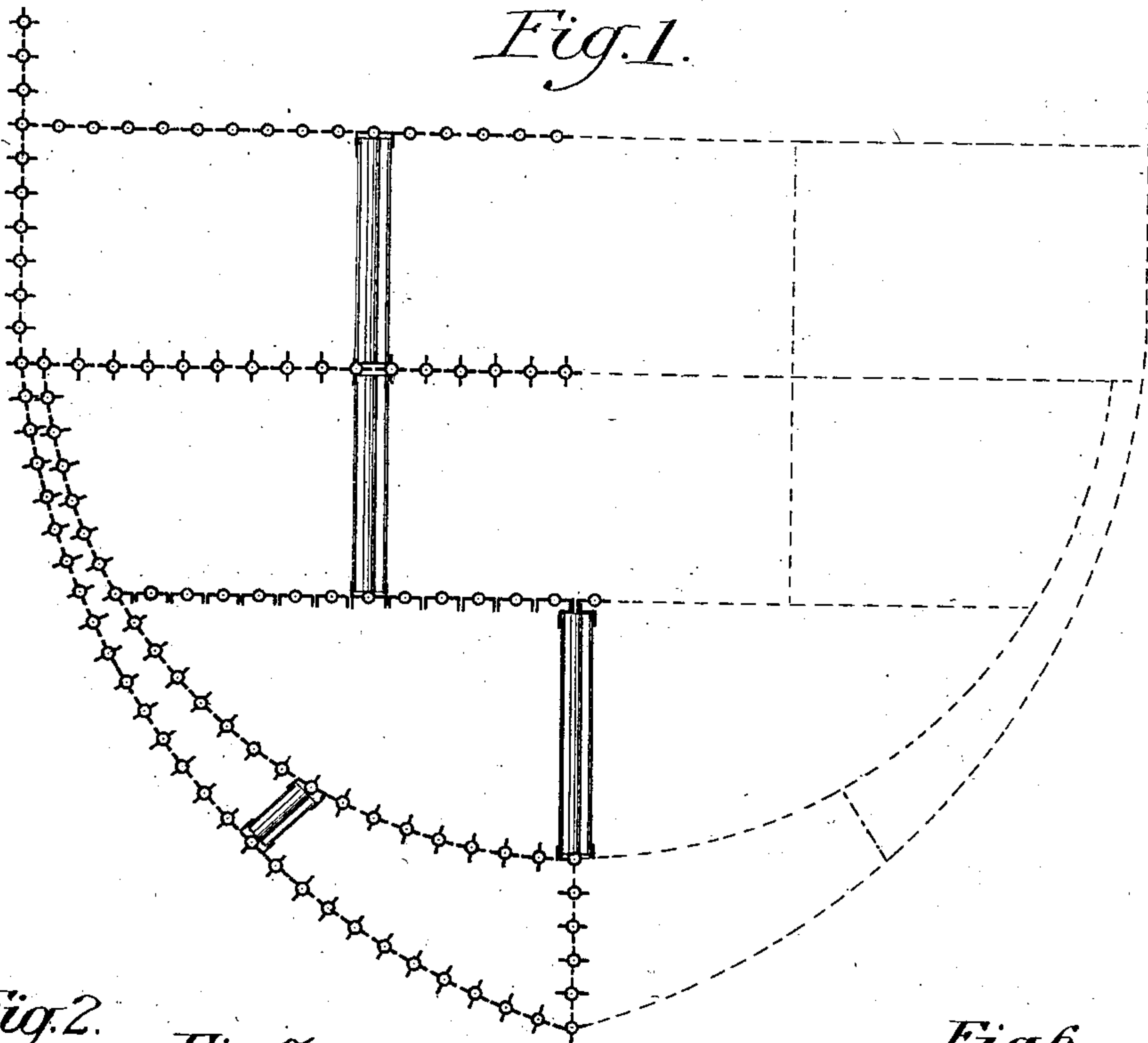


Fig. 8.

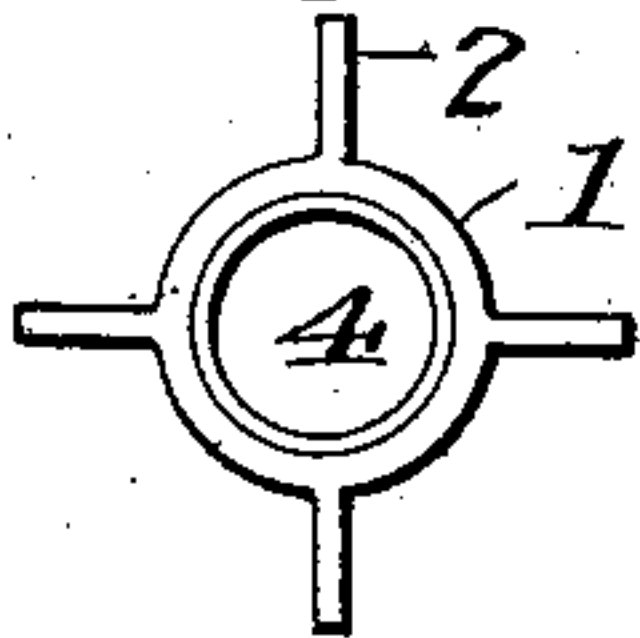


Fig. 7.

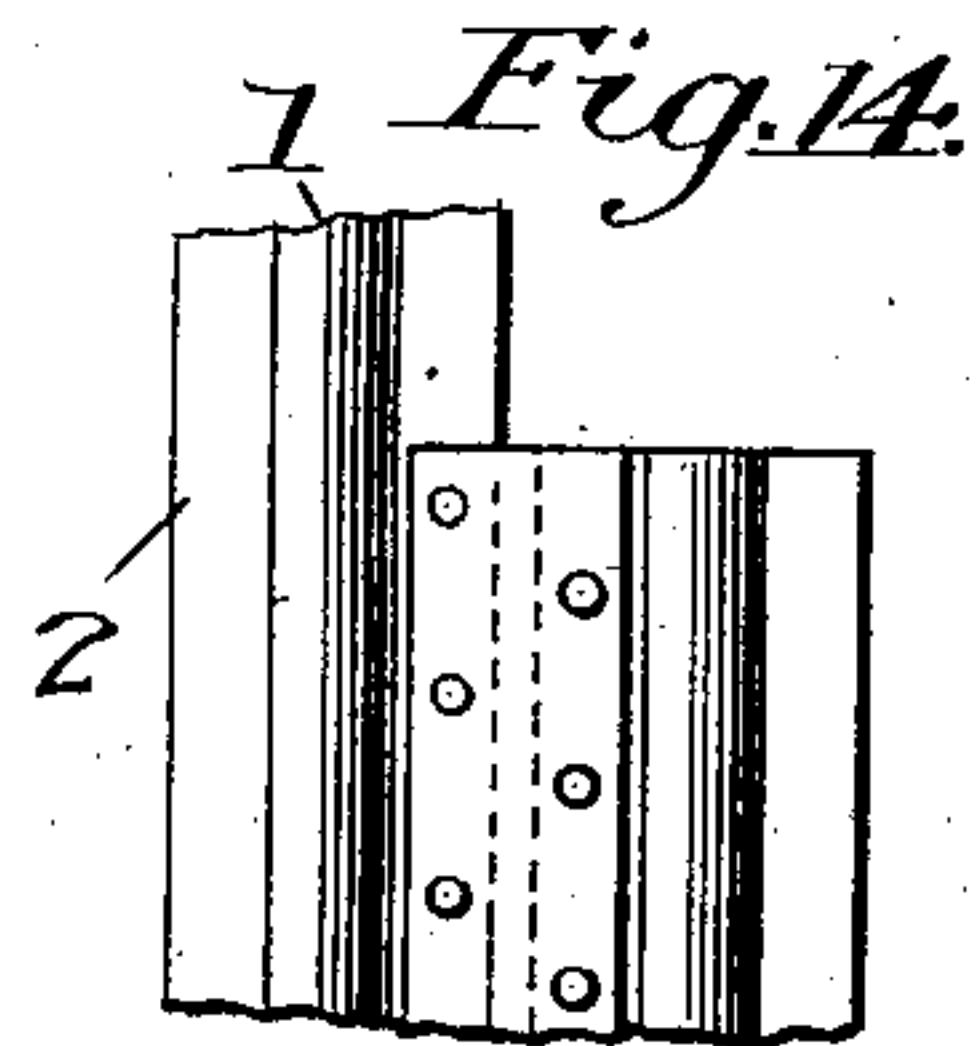
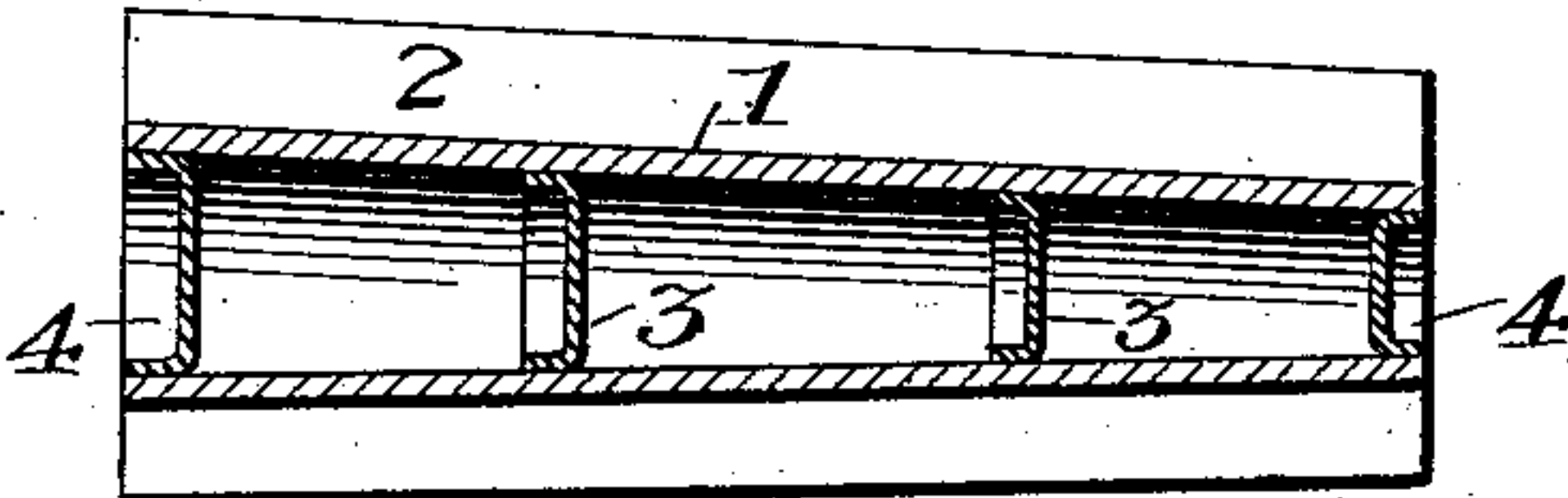


Fig. 9.



Fig. 10.



Fig. 11.

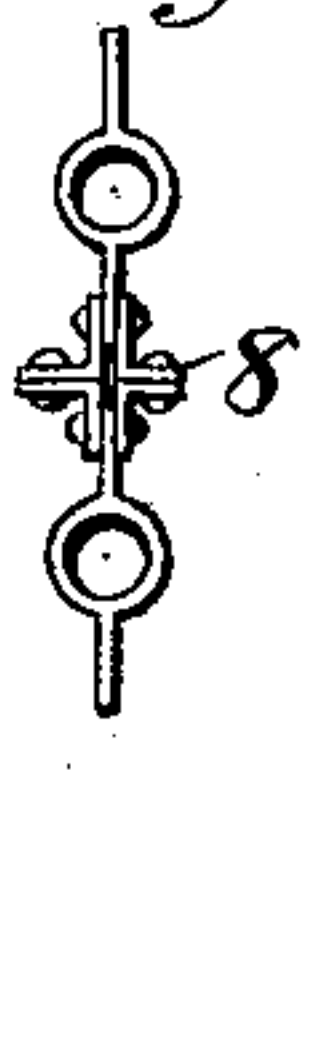


Fig. 12.

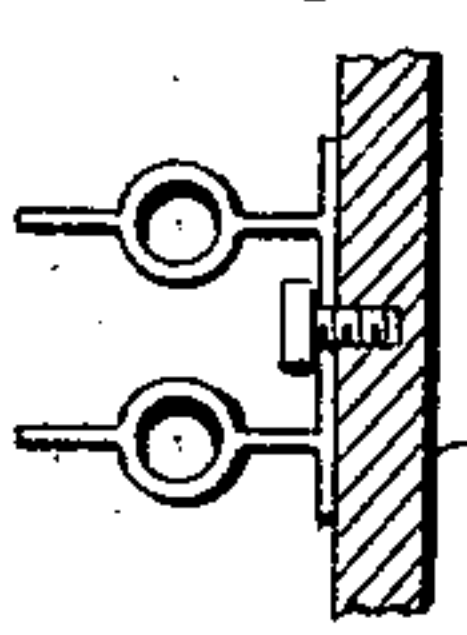
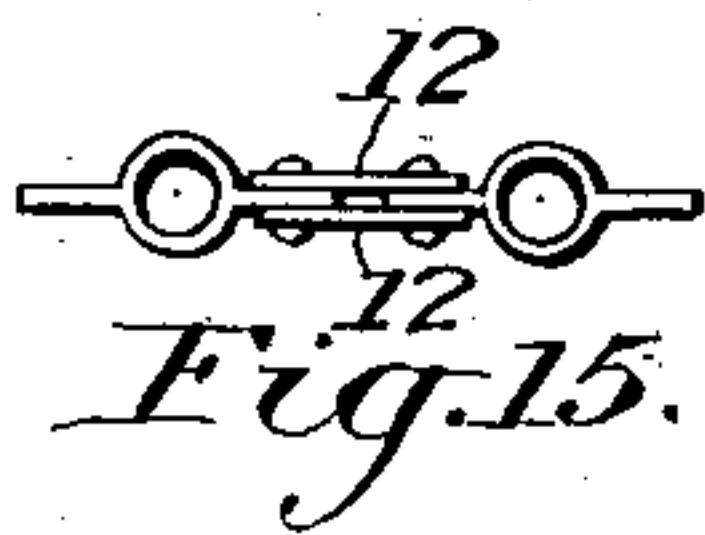
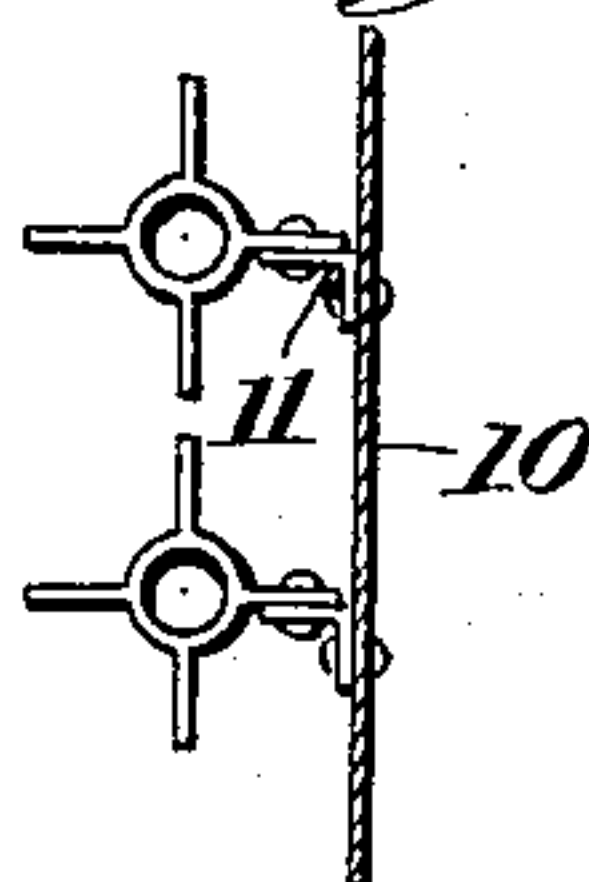


Fig. 13.



Witnesses:
D. W. Edelin
E. A. Finckel

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by M. M. Finckel, Atty.

UNITED STATES PATENT OFFICE.

PETER EYERMANN, OF PHILADELPHIA, PENNSYLVANIA.

SHIP-BUILDING.

SPECIFICATION forming part of Letters Patent No. 747,393, dated December 22, 1903.

Application filed June 27, 1903. Serial No. 163,407. (No model.)

To all whom it may concern:

Be it known that I, PETER EYERMANN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Ship-Building, of which the following is a full, clear, and exact description.

Metal shapes have been utilized in the building of ships of various kinds, but without adding to the buoyancy of the vessel. Should tubes be used, it would be necessary to add to them flanges, collars, and other parts to form connections with adjacent parts, and thus there would be an increase of weight and greatly-increased labor cost without any additional strength and no added buoyancy. Were tubes available with such connections integral, it is to be readily seen that they could be substituted for solid angles, channels, I, T, and other beams at a great increase in buoyancy, reduction in cost of labor and fitting, and increase of strength. I have succeeded in rolling seamless tubes with one or more integral flanges, webs, fins, or wings, thus producing economically and in any desired lengths shapes eminently fitted for use in building the hulls and other parts of ships, whether merchant or naval.

In the accompanying drawings, illustrating the invention, in the several figures of which like parts are similarly designated, Figure 1 is a cross-section of a ship's hull. Figs. 2, 3, 4, 5, and 6 are cross-sections of various tubes that may be used. Fig. 7 is a longitudinal section of a tube divided into water-tight compartments, and Fig. 8 is an end view thereof. Figs. 9 to 15, inclusive, illustrate various arrangements of the flanged tubes in assembling parts of a vessel.

The keel, ribs, stanchions, floor-girders, columns, and other parts of the vessel may be made of the tubes herein shown, the tubular portions serving not only for strength, but also for buoyancy, and the fins, wings, or flanges bracing such tubes and in addition affording means for uniting the tubes with each other and with other parts.

The tubes may be rolled to a taper, as shown in Figs. 7 and 8, and such tapered tubes, as well as the others, may be provided with diaphragms 3, of wood, metal, or other material, inserted in them at intervals in order to pro-

vide water-tight compartments in order to increase their buoyancy.

In all cases the ends of the tubes should be closed in a water-tight manner, as by screw-plugs 4 or other equivalent closures.

Fig. 2 shows a tube with four wings; Fig. 3, one with two wings; Fig. 4, one with wings having T-flanged ends; Fig. 5, one with L-flanged ends; Fig. 6, one with one wing T-flanged. Fig. 9 shows how parallel tubes may be united by plates 5, riveted to their wings. Fig. 10 shows how T-flanged tubes may be united by riveting the T-heads 7. Fig. 11 shows two-winged tubes united by angle-bars 8 riveted together. Figs. 9, 10, and 11 may represent a suitable keel construction. Fig. 12 shows how armor-plate 9 may be bolted onto a frame made up of tubes, such as shown in Fig. 6; and Fig. 13 shows sheathing 10, riveted on by angles 11 to four-winged tubes. Figs. 14 and 15 show, respectively, an elevation and an end view of two-winged tubes spliced together by plates 12. Thus it will be seen that the tubes may be used longitudinally or vertically.

The increased buoyancy of a vessel constructed as herein described will be evident.

Pressed, welded, or riveted flanged tubes of substantially equal weight and strength might be used in place of the seamless rolled tubes.

What I claim is—

1. A ship, the hull of which is constructed of metal tubes having external flanges, webs, fins or wings.

2. A ship, having ribs of metal tubes provided with external flanges, webs, fins or wings, and closed ends.

3. A ship, having its ribs, stanchions, floor-girders, deck-supports and the like constructed of metal tubes having integral external wings and closed ends.

4. A ship, constructed chiefly of metal tubes having external flanges, webs, fins or wings, said tubes divided into water-tight compartments.

In testimony whereof I have hereunto set my hand this 25th day of June, A. D. 1903.

PETER EYERMANN.

Witnesses:

C. W. COMSTOCK,
C. F. O'CONNELL.