

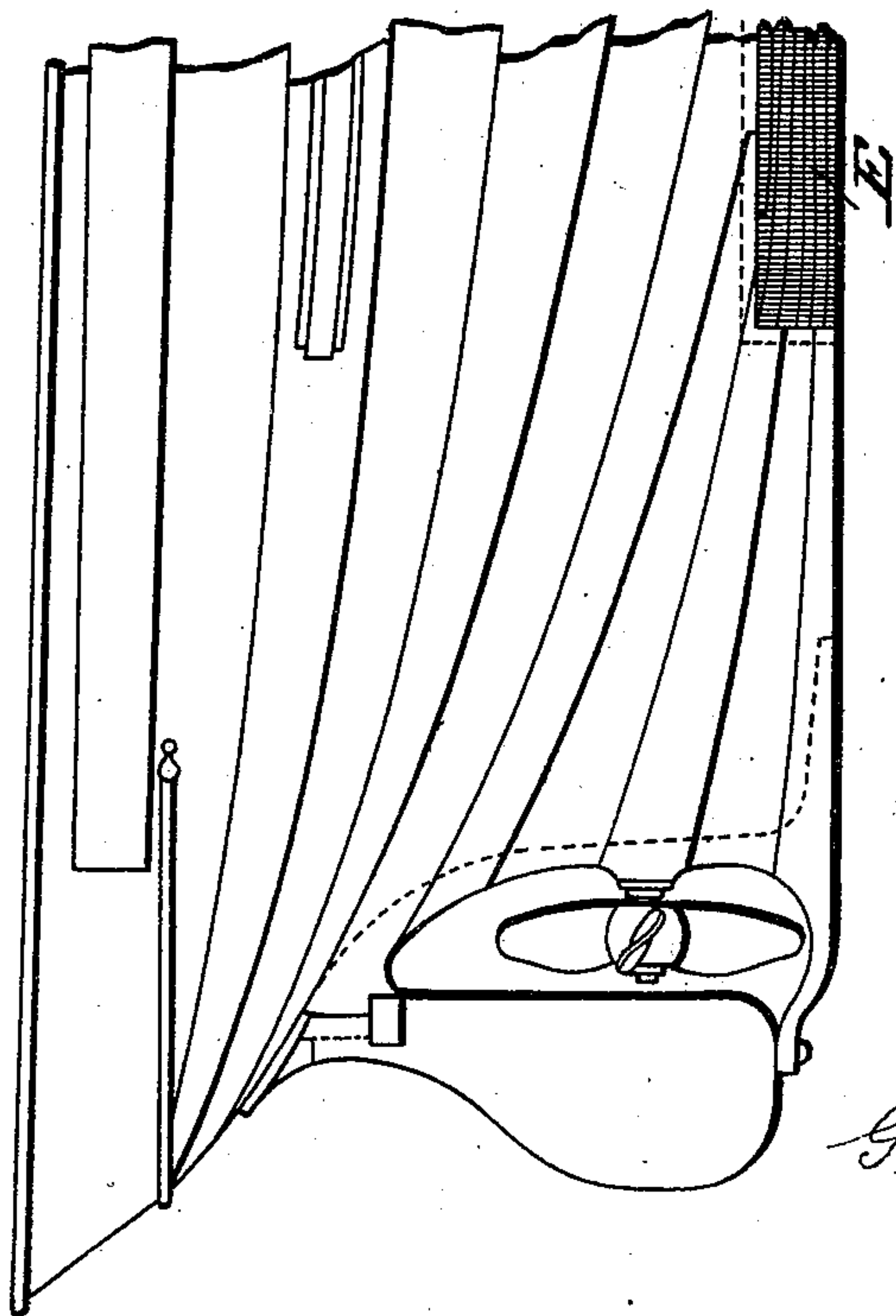
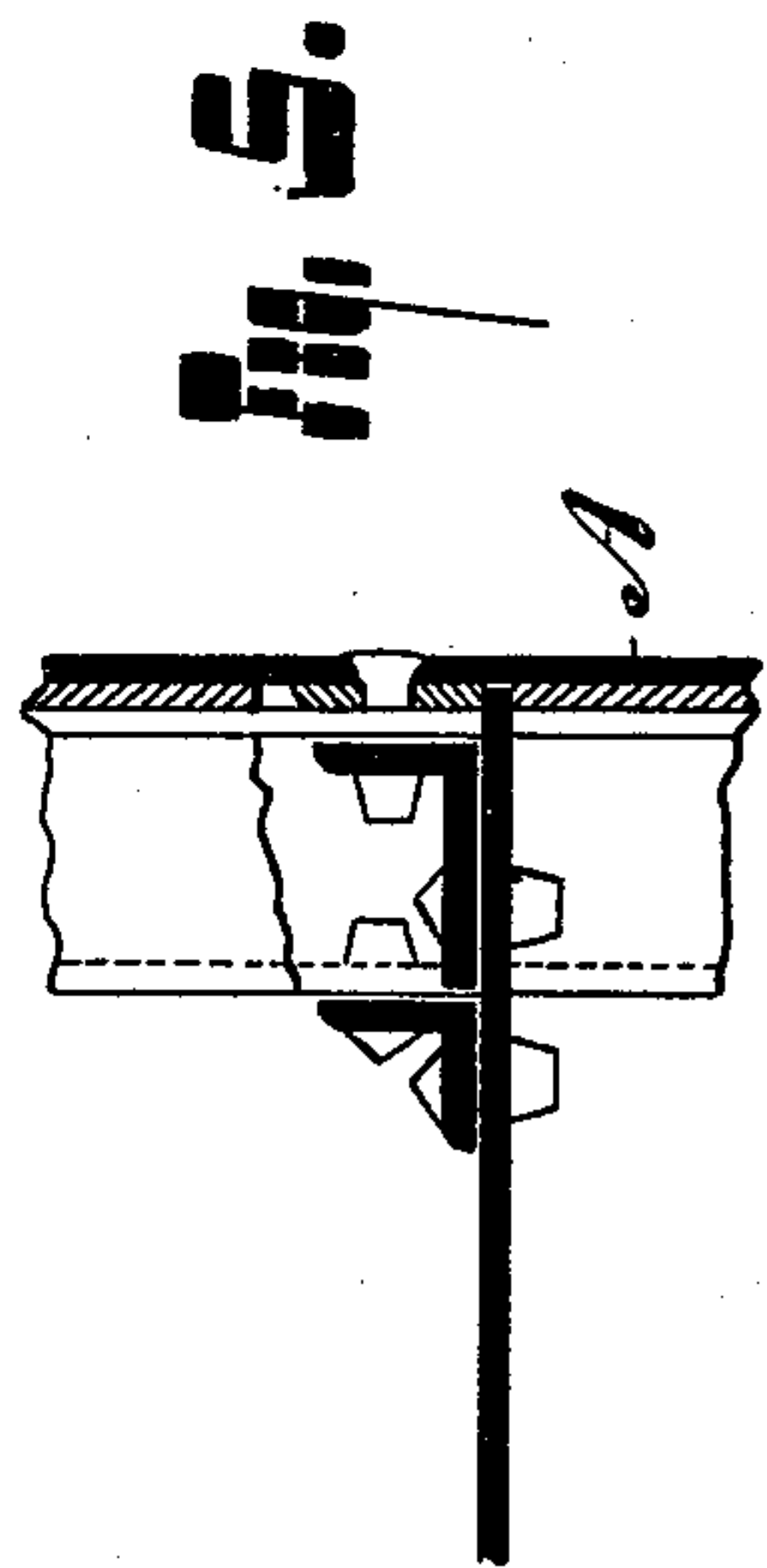
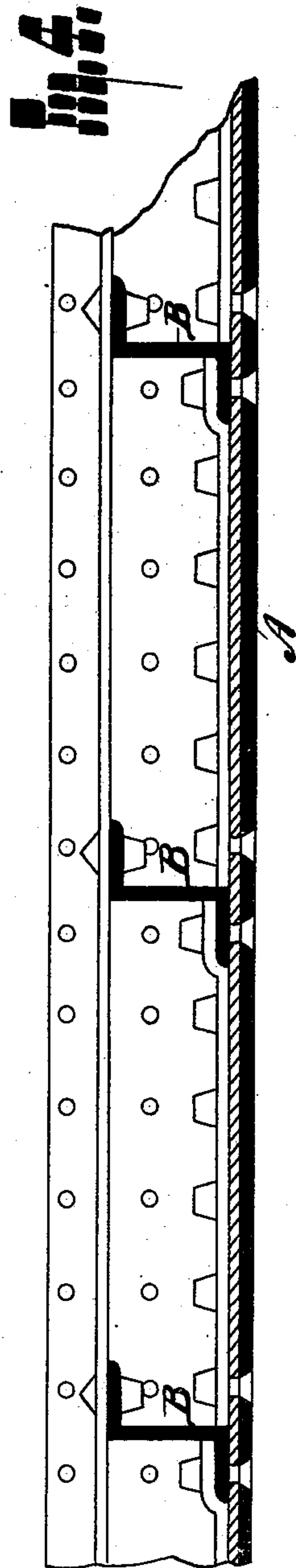
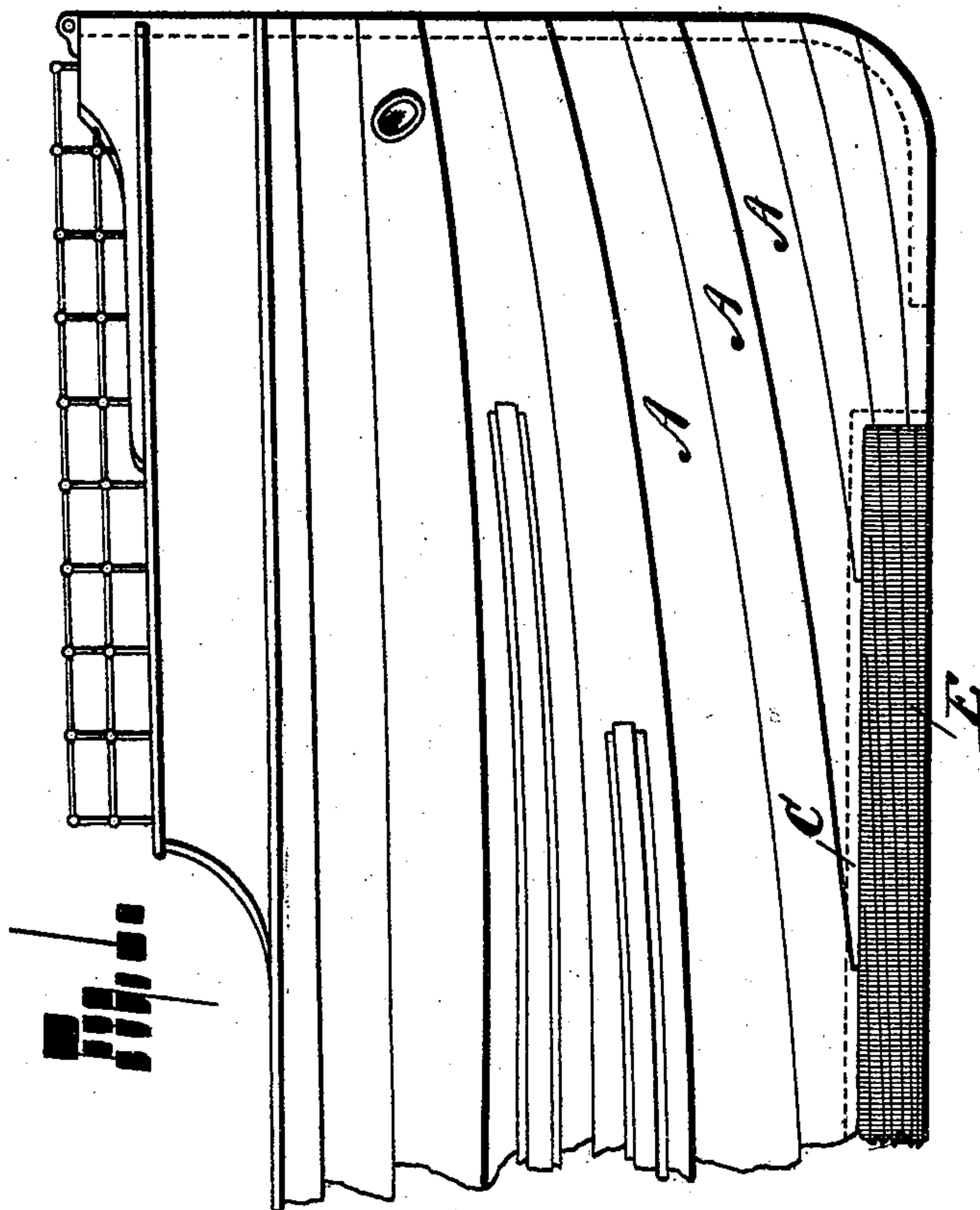
(No Model.)

2 Sheets—Sheet 1.

G. F. WILLIAMS.
VESSEL CONSTRUCTION.

No. 563,347.

Patented July 7, 1896.



WITNESSES

S. C. Thomas
C. H. Fisk

INVENTOR

Geo F Williams

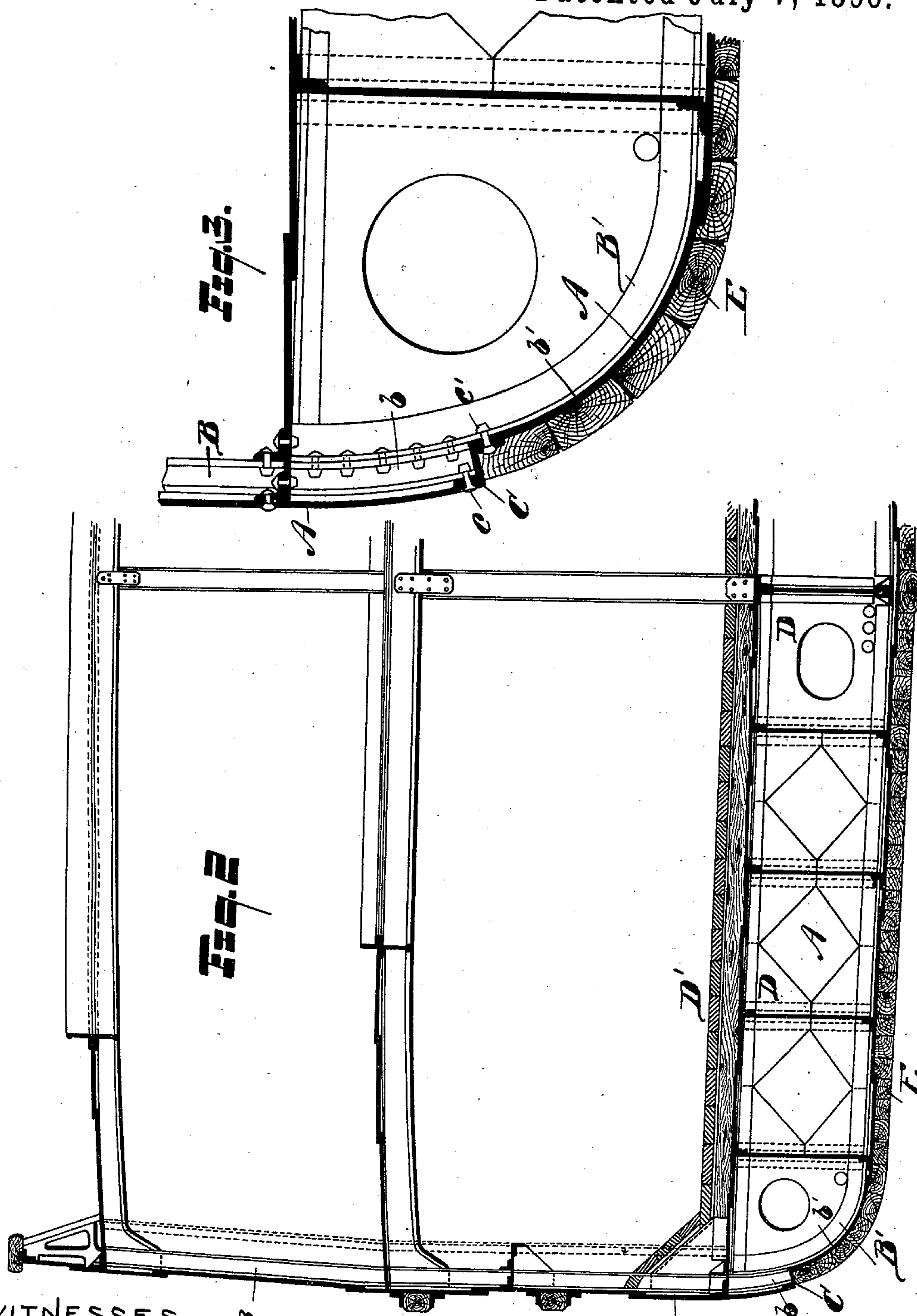
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INVENTOR

George F. Williams

UNITED STATES PATENT OFFICE.

GEORGE F. WILLIAMS, OF WEST BAY CITY, MICHIGAN.

VESSEL CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 563,347, dated July 7, 1896.

Application filed June 17, 1895. Serial No. 553,149. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. WILLIAMS, a citizen of the United States, residing at West Bay City, county of Bay, State of Michigan, have invented a certain new and useful Improvement in Vessel Construction; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in vessel construction, and its object is to provide sheathing of wood for metal vessels without the wooden sheathing projecting beyond the surface of the iron plating. The object of the wooden sheathing is to protect the metal plating against rocks and to strengthen the vessel. I am aware that vessels have been constructed by putting the iron plates on in the usual manner and then sheathing over a portion with wood. This necessarily brings the wood outside of the regular form of the vessel and makes an obstruction to the movement of the vessel.

My invention consists in recessing a portion of the hull of a depth equal to the thickness of the wooden sheathing, and then filling the recessed portion with the wooden sheathing. To construct this form of a hull, I preferably arrange to have the wooden sheathing extend from the collision-bulkhead to the stern-bulkhead and up the sides of the vessel a sufficient distance to afford practical protection. The details of the construction are shown in the following drawings, in which—

Figure 1 is an elevation of a vessel with the center portion cut away. Fig. 2 is a vertical cross-section of one-half of the vessel. Fig. 3 is an enlarged view of portions of that shown in Fig. 2. Fig. 4 is a view showing Z bars or frames in place of the channel-frames shown in the other figures. Fig. 5 is a partial section showing angle-bars connecting the tank-top to the shell plating and reverse flange of frame.

In the drawings, A represents the metal plates of the vessel.

B are the frames, made of channel or Z iron,

which support these plates above the point where the wooden sheathing goes on, and B' represents the frames from this point to the keel. I prefer to make these frames B' of angle or T iron. The channel-iron B and the angle-iron B' are united at *b*, and the angle-iron B' is brought inside, as there shown, and from the point where the two come together to the keel the iron plates are set back into the recess thus formed and riveted to the angle-iron B', as shown at *b' b'*.

C is a continuous bar of Z-iron running around the edge of the recessed portion and riveted on the outside to the channel irons or frames B B, under the iron plates, and on the inner edge to the angle irons or frames B' B'. The manner in which this Z-bar is riveted to the plates and outer frames is shown at *c* and *c'*, Fig. 3.

D represents any suitable support for the tank-floor D'.

E represents the wooden sheathing that is bolted to the angle irons, frames, or plates B' B', and which fills the recess formed by setting the frames back, as shown and described.

By the construction shown it is evident that the wooden sheathing, when recessed and held as shown, presents no obstruction to the movement of the vessel and leaves the hull in its regular form, while at the same time it protects it against the dangers before mentioned.

What I claim is—

1. In a vessel the metal covering A having offset and inset parts, the connecting-bar C, between the inset and offset parts, and the wooden sheathing secured to the inset part and having its outer surface flush with that of the offset part, substantially as set forth.

2. In a vessel the offset metal covering A, the frames B, and the inset frames B', a bar secured to both sets of said frames and the wooden sheathing secured to the inset part and having its outer surface flush with that of the offset part, substantially as set forth.

3. In a vessel the offset metal covering A, the Z-shaped bar secured to both parts of the said covering and the wooden sheathing secured to the inset part and having its outer surface flush with that of the offset part combined with the frame-irons B and B', said frame-irons B' overlapping the irons B and

bolted thereto and to the **Z**-shaped irons, substantially as set forth.

4. In a vessel the upper outer metal covering extending below the water-line, the inset
5 metal covering, the **Z**-shaped bar connected to each part of the covering and joining the same and a wooden sheathing covering the entire bottom of the vessel and having its ex-

terior flush with that of the offset metal covering, substantially as set forth. 10

In testimony whereof I sign this specification in the presence of two witnesses.

GEORGE F. WILLIAMS.

Witnesses:

CURTIS E. PIERCE,
MAMIE McCORMICK.