

*L. Hein.
Building.*

N^o 42,190.

Patented Apr. 5, 1864.

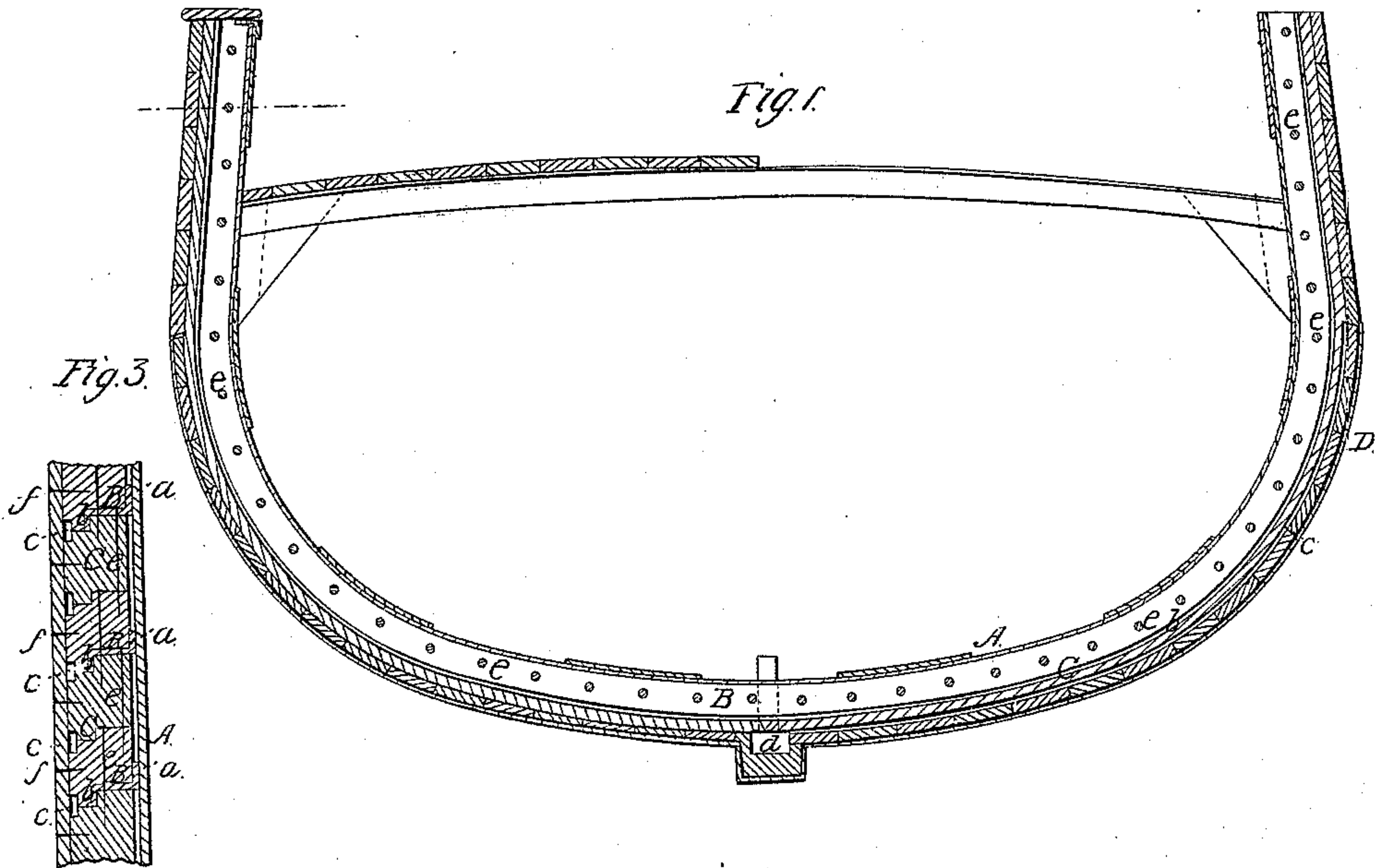
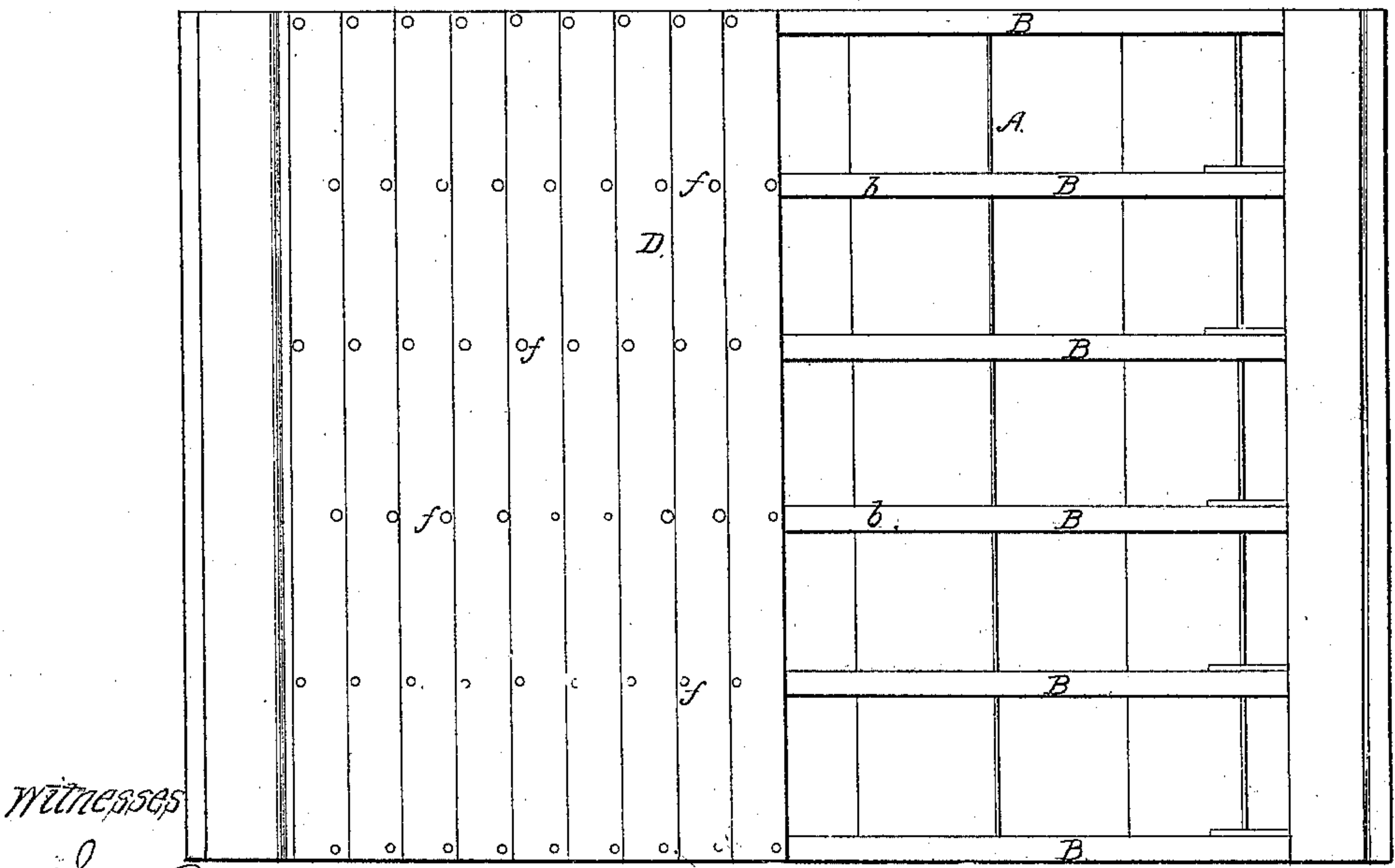


Fig. 2.



Witnesses

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IMPROVED CONSTRUCTION OF VESSELS.

Specification forming part of Letters Patent No. 42,190, dated April 5, 1864.

To all whom it may concern:

Be it known that I, LOUIS HEIN, of the city, county, and State of New York, have invented a new and useful Improvement in the Construction of Vessels; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a transverse vertical section of my invention. Fig. 2 is an inverted plan of the same. Fig. 3 is a horizontal section of one of its sides.

Similar letters of reference in the three views indicate corresponding parts.

This invention relates particularly to an improvement in the construction of iron vessel; and it consists in building the frame of such vessels of angle-iron, with flanges outside and inside, or single-flange angle-iron plating to be riveted to the flanges, and the frames to be filled with timbers, which are bolted to each other and to said frames and project outside of the same, and calked to prevent the iron vessel from being injured by water. To these timbers is fastened a calked planking. The timbers used for filling the frames are provided with grooves leading down to a channel cut out of the bottom timbers and keel, and communicating with a pump in such a manner that all the water which may leak through the outside planking will collect in said channel, from which it can readily be removed by the action of the pump.

To enable those skilled in the art to make and use my invention, I will proceed to describe it.

A represents the plating of a vessel, constructed in the ordinary shape and manner. This plating is secured by means of rivets or in any other suitable manner to the flanges *a* of the frames B, which are made of double-flange angle-iron, as clearly shown in Fig. 3 of the drawings. The iron used for these frames is rolled out in the usual manner, and curved to correspond to the desired cross-section of the vessel, and said frames are painted hot with coal-tar and filled in with

timbers C, which are dovetailed together and held in place by each other and by the outside flanges, *b*, of the frames, as clearly shown in Fig. 3. The spaces between the timbers and plating A are filled with pitch, coal-tar, or felt, and said timbers project outside the frames and are calked. In each timber will be cut a groove, *c*, about one inch deep and two inches wide, leading down to a channel, *d*, cut out in the bottom of the timbers and the keel as far as practicable, and extending throughout the entire length of the vessel, or nearly so. From this channel suitable pipes of copper or other material lead to a cistern which is placed in the bottom of the vessel, and connects with a pump. The timbers are fastened to each other and to the frames by means of bolts *e*, and secured to their outside by means of composition nails *f* in the planking D. The vessel is coppered in the usual way for wooden ships. The grooves *c*, cut in the timbers C, are intended to carry all the water that may pass through between the seams of the outside planking, though this planking is calked down to the channel *d* under the bottom of the vessel, whence it can easily be removed by the pump, and injury to the timbers or frames from that source is avoided. The casing can be built without planking, in which case the grooves in the timbers will be cut inside the calking in their seams, leading to a channel below, as above described. By this construction all the advantages of an iron vessel are combined with those of wooden vessels. The vessel is light, buoyant, and very strong, and the entrance of water to the interior of the vessel under ordinary circumstances is effectually prevented.

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

A vessel constructed with ribs B *a b* of angle-iron, a water tight wooden casing, C, strengthening and protecting the said ribs, and an external planking or sheathing, D, all as herein specified and for the purposes explained.

L. HEIN.

Witnesses:

M. M. LIVINGSTON,
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