

(No Model.)

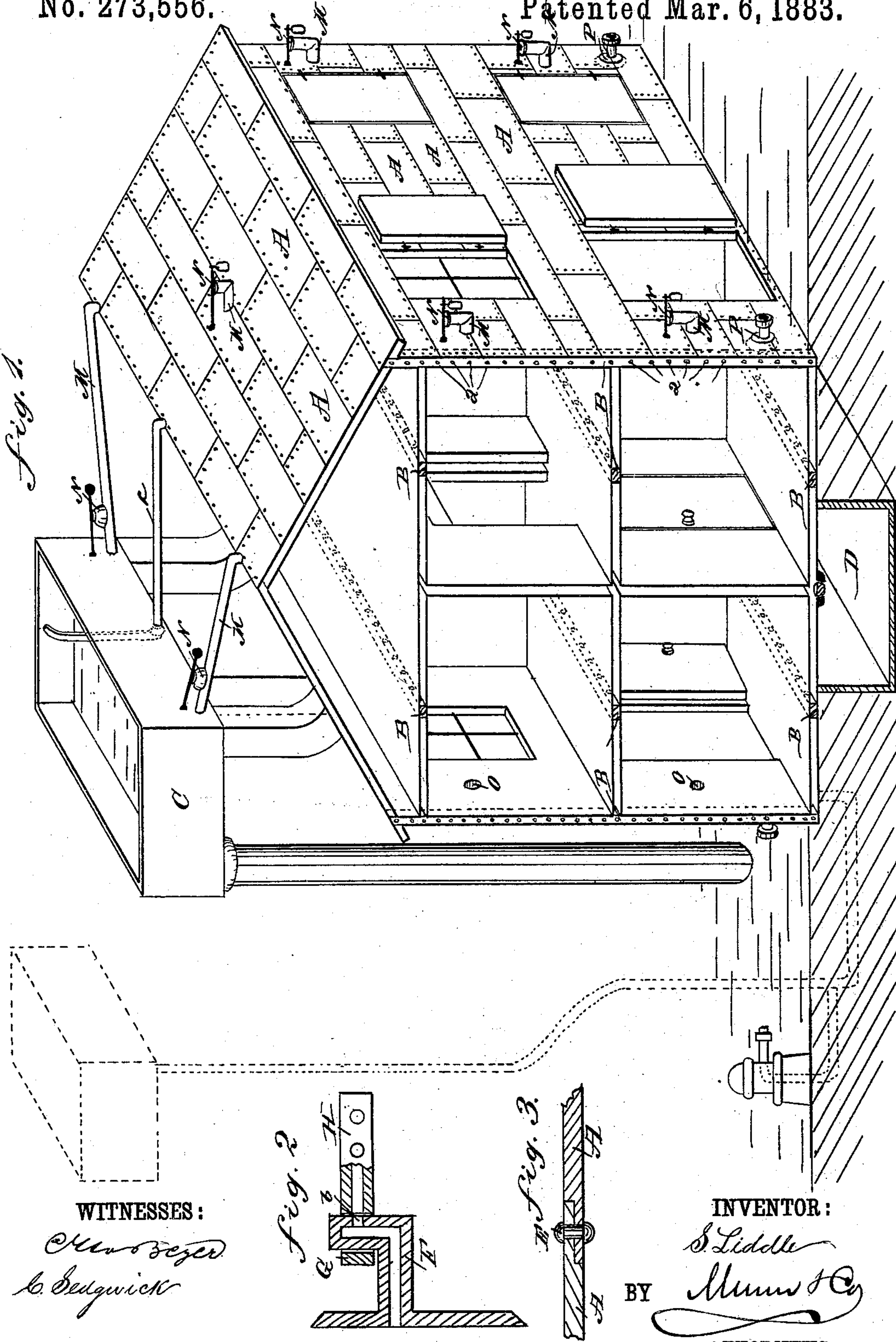
2 Sheets—Sheet 1.

S. LIDDLE.

FIRE PROOF STRUCTURE.

No. 273,556.

Patented Mar. 6, 1883.



WITNESSES:

Wm. Beyer
C. Sedgwick

Fig. 2

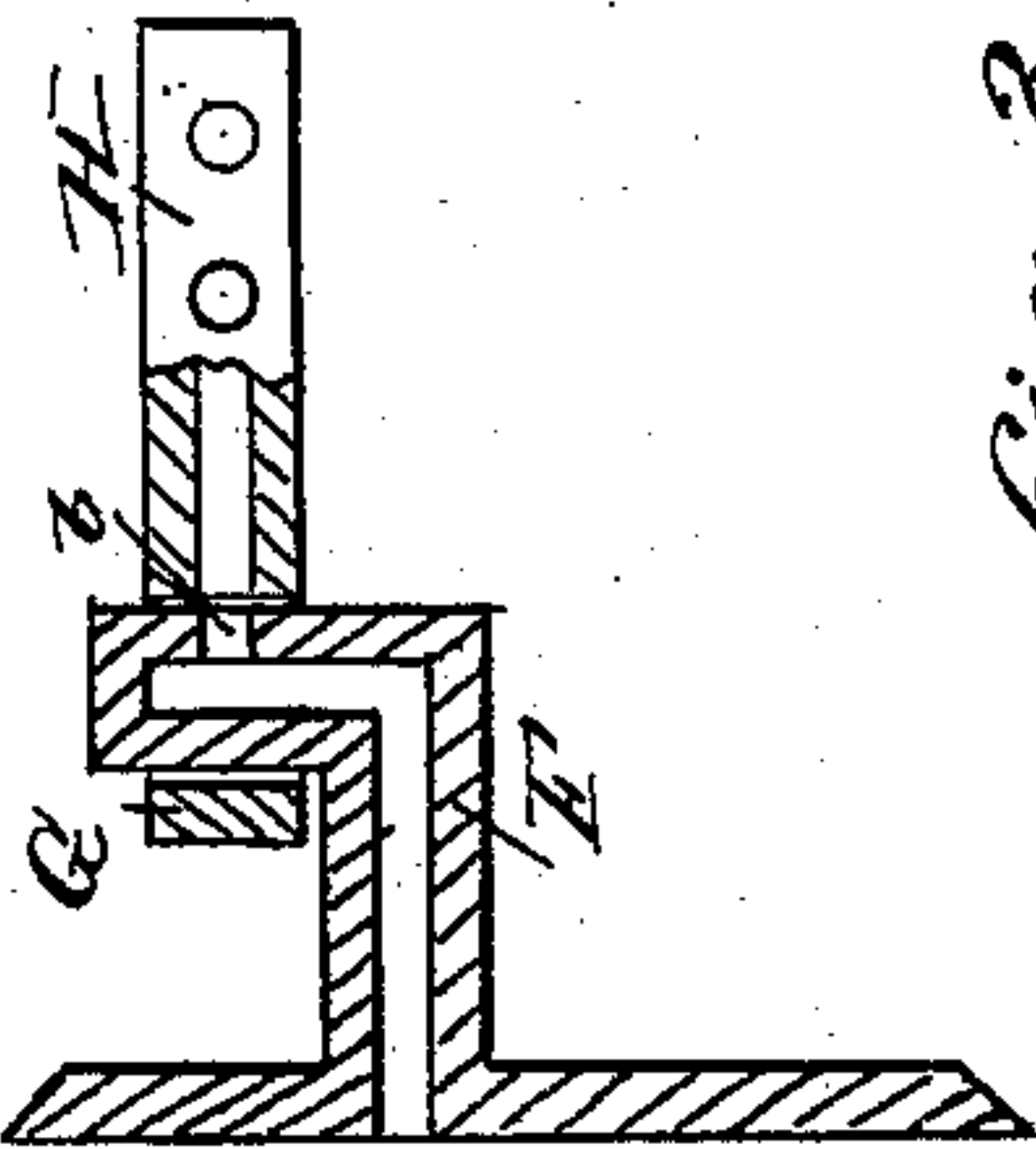


Fig. 3



INVENTOR:

S. Liddle

BY

Munn & Co

ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

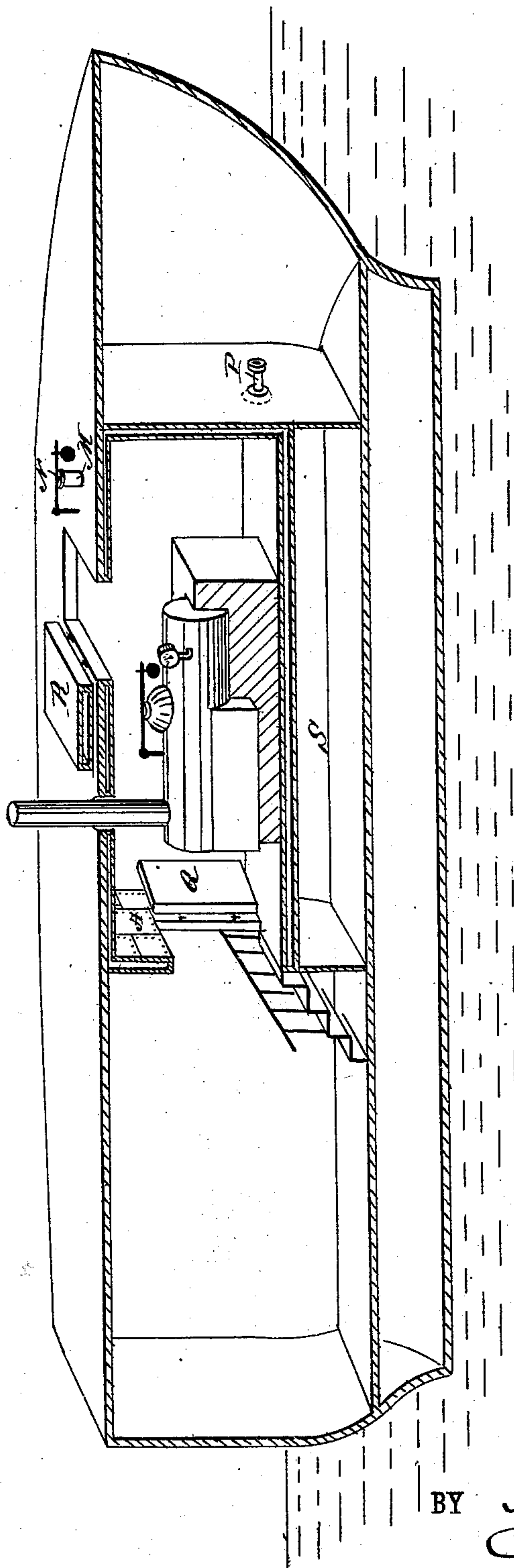
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fig. 4.



WITNESSES:

Chas. Zeiger
C. Sedgwick

INVENTOR:

S. Liddle

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UNITED STATES PATENT OFFICE.

SAMUEL LIDDLE, OF HAMILTON, NEVADA.

FIRE-PROOF STRUCTURE.

SPECIFICATION forming part of Letters Patent No. 273,556, dated March 6, 1883.

Application filed June 22, 1882. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL LIDDLE, of Hamilton, in the county of White Pine and State of Nevada, have invented a new and Improved Fire-Proof Structure, of which the following is a full, clear, and exact description.

The invention consists in a building (the same is also applicable in the hull of a vessel) constructed of metal plates attached to both sides of perforated iron posts, beams, &c., whereby a building with a hollow shell is formed, which shell can be filled with water from a reservoir above the building in case of fire, which water is to be drawn off into a tank situated lower than the building after the fire is over, and can then be pumped back into the reservoir.

The invention also consists in a certain construction of a tubular or hollow hinge, by means of which hollow shutters can be hung to the building, and the water can pass from the hollow shell of the building into the hollow shutter.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of my improved fire-proof structure, parts of the walls being removed. Fig. 2 is a detail sectional view of one of the shutter-hinges for the shutters or doors. Fig. 3 is a sectional view of the two united plates. Fig. 4 is a longitudinal sectional perspective view of a steam-vessel having its boiler inclosed in one of my improved fire-proof compartments.

The structure is made of metal plates A, which are securely riveted or bolted to studs, posts, or beams B, provided with perforations or apertures *a*, so that the structure will consist of a hollow shell which can be filled with water, the beams, posts, &c., being perforated, so that the water can pass into all parts of the hollow shell. The water can be conducted into this hollow shell from any suitable reservoir, C, located higher than the building, and the pipes *c* from this reservoir can enter the shell at the top or bottom, as may be desired. If desired, the pipes leading into the shell may be connected with a hydrant or with a water-main. The shell is perforated by a series of outlet-pipes, M, which are provided with suit-

able valves N, as shown, which valves open automatically as soon as the pressure of the steam created in the shell by the heat of the fire or the engine becomes too great. If desired, the outlet-pipe M may be conducted into the tank C, so that the steam in these pipes M will be condensed by the water in this tank, and can then flow again into the shell, so that the same water can be passed into the shell several times. The shell is also provided with openings O, closed by outwardly-opening valves, through which openings the smoke or fumes in the rooms can pass off. If the pipe from the reservoir C enters the building at the bottom, a check-valve must be provided, so that the water that has passed into the shell will be retained in the same and cannot flow out. For the same purpose I have provided nozzles P, having check-valves, to which nozzles hose from an engine or from a hydrant are attached for filling the shell with water, and so that the water cannot flow out of the shell back into the hydrant or upon the ground when the pipes are removed, I have provided automatic check-valves, for it is often so hot in the neighborhood of the fire that the firemen would not be able to go to the building to turn off globe or other valves, which would have to be used if the check-valves were not provided. A tank, D, must be provided below the structure, or below the level of the lowest point of the shell, so that the water in the shell can be drawn off into this tank, and can later on be pumped from the same into the reservoir C. The plates A overlap each other, and are secured to each other by means of rivets E, which preferably have their inner heads countersunk, so that the inner surface of the wall will be perfectly smooth and can be painted in imitation of wood, stone, or stucco. The shutters are made hollow, and are hung on hollow angular hooks F, which are each provided with an aperture, *b*, through which the water can pass into the hollow eye G of the hollow hinge-bar H, to which the shutter is attached. The lowest hollow hinge is intended to be located so as to drain the shutter. The doors can be constructed in the same manner, if desired; or wooden doors can be used for ordinary use. The hollow iron doors and shutters will thus be filled with water with the rest of the shell. If the shell is filled with

water, the building will be absolutely fire-proof and the plates cannot warp or shrink under the action of the heat. Around the window and door openings the outer and inner plates
5 are connected by the window and door frames, which must have very close joints, so that no water can leak out. It is evident that the shell is only to be filled with water when there is danger from fire.

10 As shown in Fig. 4, the engine-room of a steamer may be constructed with hollow walls in the manner described, and the doors Q and the hatches R are also to be made hollow, and can be hung by means of the improved hinges
15 shown in Fig. 2. This hollow shell filled with water will prevent the spread of fire in the engine-room, and will be much better, simpler, and cheaper for the walls or floors than the bricks or tiles, such as are at present used in
20 engine-rooms. The entire hull, the decks, and the bulk-heads of steam or sailing vessels may be constructed with two iron walls and the water-space between them, if desired. In all cases these shells must be provided with gas
25 or steam escapes, so that they will not explode or be ruptured or burst by the great pressure in the shells. If a steamer, it would be advisable to keep the space S under the boiler continually filled with water.

30 Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A fire-proof structure, vessel, hull, or bulk-head, constructed, substantially as herein
35 shown and described, of metal plates attached to perforated iron struts, beams, and posts,

whereby hollow floors and walls will be formed, which hollow walls and floors can be filled with water, as set forth.

2. The combination, with a structure with
40 hollow walls and floors, of the outlet-pipes M, provided with the valves N, substantially as herein shown and described.

3. The combination, with a structure constructed with hollow walls and floors, of a wa-
45 ter-tank, pipes for conducting the water into the shell of the structure, and pipes for conveying the steam created in the shell into the tank to be condensed, substantially as herein shown and described, and for the purpose set
50 forth.

4. The combination, with a structure having hollow walls and hollow shutters, of the hol-
low angular hooks F, provided with the aper-
55 ture *b*, and the hollow hinge-bar H, substan- tially as herein shown and described.

5. The combination, with a structure constructed with hollow walls, of the hollow or
tubular hook F, provided with an aperture, *b*,
60 and the hollow hinge-bar H, provided with an eye, G, substantially as herein shown and de- scribed, and for the purpose set forth.

6. The combination, with a structure constructed with hollow walls, of a reservoir lo-
cated higher than the building, and a tank
65 located lower than the bottom of the building, substantially as herein shown and described, and for the purpose set forth.

SAMUEL LIDDLE.

Witnesses:

GEO. P. MCCONKEY,

C. A. MATHEWSON.