

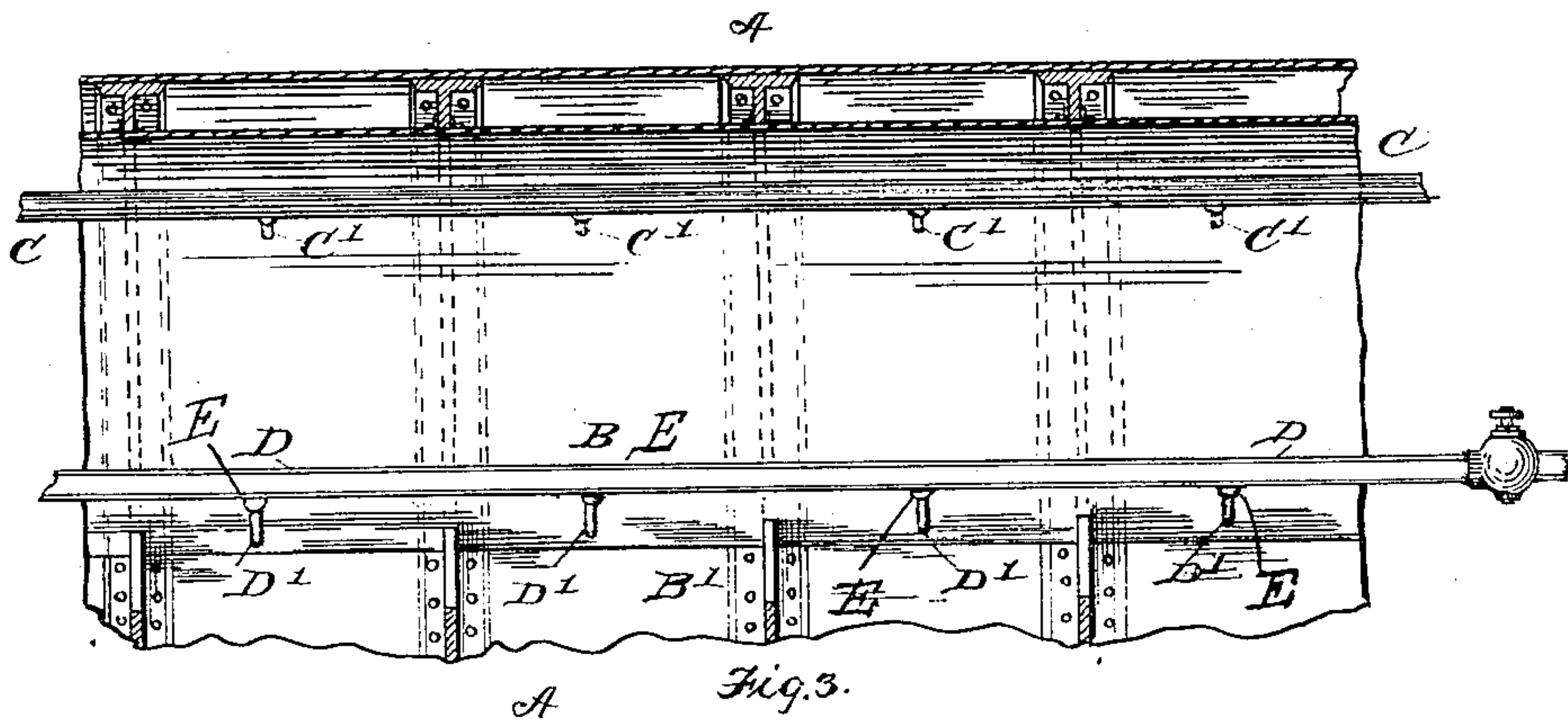
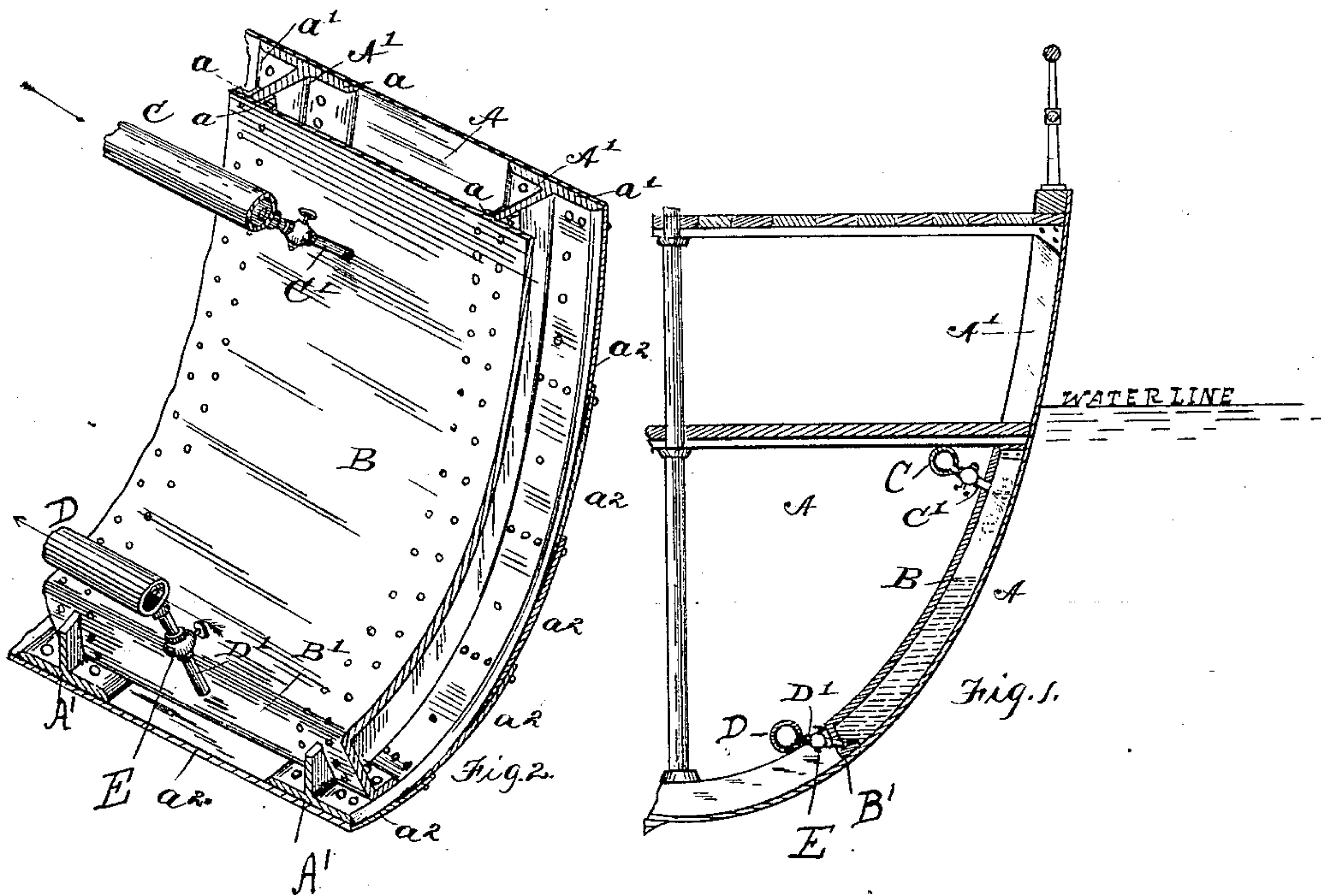
(No Model.)

A. L. KIRKLAND & T. A. LYNCH.

STEAM CONDENSING APPLIANCE.

No. 368,402.

Patented Aug. 16, 1887.



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UNITED STATES PATENT OFFICE.

AUSTIN L. KIRKLAND, OF BOSTON, AND THEOPHILUS A. LYNCH, OF
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STEAM-CONDENSING APPLIANCE.

SPECIFICATION forming part of Letters Patent No. 368,402, dated August 16, 1887.

Application filed January 10, 1887. Serial No. 223,943. (No model.)

To all whom it may concern:

Be it known that we, AUSTIN L. KIRKLAND and THEOPHILUS A. LYNCH, citizens of the United States, residing at Boston and McKeesport, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Steam-Condensing Appliances, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of this improvement is a steam-condensing appliance adapted to supplying the boilers of stationary or marine steam-engines with clear and fresh water at all times, whether at sea or on inland streams. These results are attained by the means illustrated in the drawings herewith filed as part hereof, in which the same letters of reference denote the same parts in the different views.

Figure 1 represents a transverse vertical section of the hull of a marine vessel adapted by construction for use as a reservoir and condenser. Fig. 2 is a perspective representation of a longitudinal vertical section of same, more fully illustrating the construction. Fig. 3 is a longitudinal sectional view of a portion of a vessel's hull, showing a series of reservoirs and condensing-chambers in same below the water-line.

A represents the hull. A' are the ribs of the hull. The ribs A' are provided with flanges at a' , provided with suitable perforations for the reception of bolts or rivets, as shown, by means of which the strakes a^2 are secured to the ribs, which ribs are also provided with flanges a at their inner edges, having perforations for the reception of bolts, screws, or rivets, by means of which the hull is provided with an inside lining, B, which is connected at its lower part with the adjacent strake of the hull by means of a flange, as shown at B', and with the ribs A' in a manner to make the connection water-tight, and thereby forming a reservoir for holding fresh water, and which is also adapted to form a condensing-chamber by reason of a similar connection at the top part of the lining B with the adjacent strake and part of the ribs A'. This lining B may be extended across the bottom of the hull up the opposite sides of the vessel to the water-line, in which case the

flange B' may be dispensed with. Each chamber formed by the ribs A' and lining B is connected by means of a pipe, C, and a valve, C'. This pipe C is connected with the exhaust-pipe of the engine and is to be located at or near the highest point of the chambers, substantially as shown. These chambers are also connected with each other by means of similar pipes, D D', which pass each chamber at its lower part and lead to the pump which feeds the boiler.

Any and every part of the hull below the water-line may be formed into such chambers, and by reason of the valves C', which connect the pipe C with each chamber formed by the lining B, the steam may be conducted into or excluded from any number of these chambers, as may be deemed advisable for heating the water therein or preventing the same from being heated, as occasion may require, because by this mode of exhaust the steam will come in contact with the side of the vessel, which is cooled by the surrounding water, and thereby be condensed.

The lower or supply pipe, D, may be supplied with valves, as shown at E, for the purpose of letting into or excluding from the supply-pipe D water from any of the chambers formed by the lining B.

Through the pipe D the water is returned to the boiler while still warm, thus saving fuel. By reason of the same water being used over and over again ocean vessels may be provided with fresh water for steam purposes, and vessels that ply on fresh-water streams can have a constant supply of clear water for supplying the boilers when the waters of the streams are muddy from rains or other causes. By supplying the boilers with clear water only, steam will be more economically produced and the boilers will not need cleaning except at rare intervals.

A partial vacuum will be formed in the chambers of the reservoir and the passage of the steam will be accelerated thereby, and the return-stroke of the piston will also be aided, and an additional economy of power thereby attained. In case a hole should be knocked in the vessel from the outside the valves or stop-cocks connecting the chambers with each

other and the inner lining, B, will prevent the vessel from leaking.

The same principle may be applied to stationary engines by means of a submerged tank 5 provided with a suitable supply of water and connected with the engine, pump, and boiler by an exhaust and supply pipe, substantially as set forth.

Having explained the features and operation of our improvement, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the hold of a vessel, of the ribs A', having perforated flanges a 15 a', inner lining, B, with flange B' at its lower end, and outer covering, A, whereby a water-tight compartment is formed below the water-line, and suitable supply and exhaust pipes arranged at the top and bottom of said chamber and connected with the engine and boiler, 20 substantially as described, for the purposes set forth.

2. The combination, in a steam-condenser

for marine engines, with the hull of a vessel having a series of water-tight compartments 25 formed therein between the ribs and inner and outer shell and below its water-line, of a main pipe connected with the steam-exhaust of the engine, extending along the top of said chambers, and supplied with a series of short 30 branch pipes with valves therein, connecting said main pipe with each one of the series of compartments, and a similar main pipe extending along the bottom of the chambers, and connected with the boiler and each of the series 35 of compartments by a series of short branch pipes having valves therein, substantially as and for the purposes described and shown.

In testimony whereof we affix our signatures 40 in presence of two witnesses.

AUSTIN L. KIRKLAND.

THEOPHILUS A. LYNCH.

Witnesses:

THOS. COATES,

E. F. WOOD.