

(No Model.)

J. H. BARNES.
Harbor Ballast for Ships.

No. 232,435.

Patented Sept. 21, 1880.

Fig. 1.

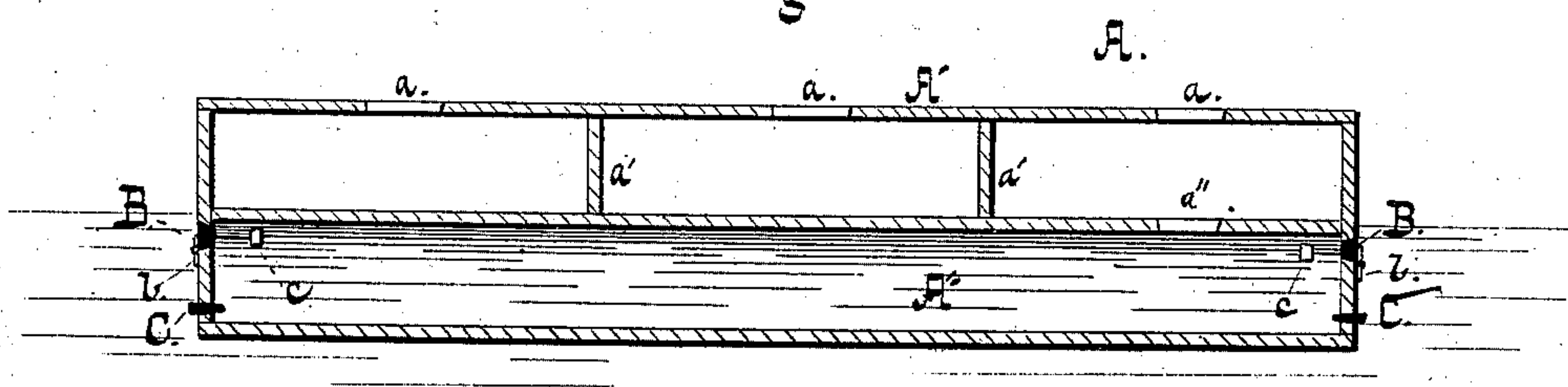


Fig. 2.

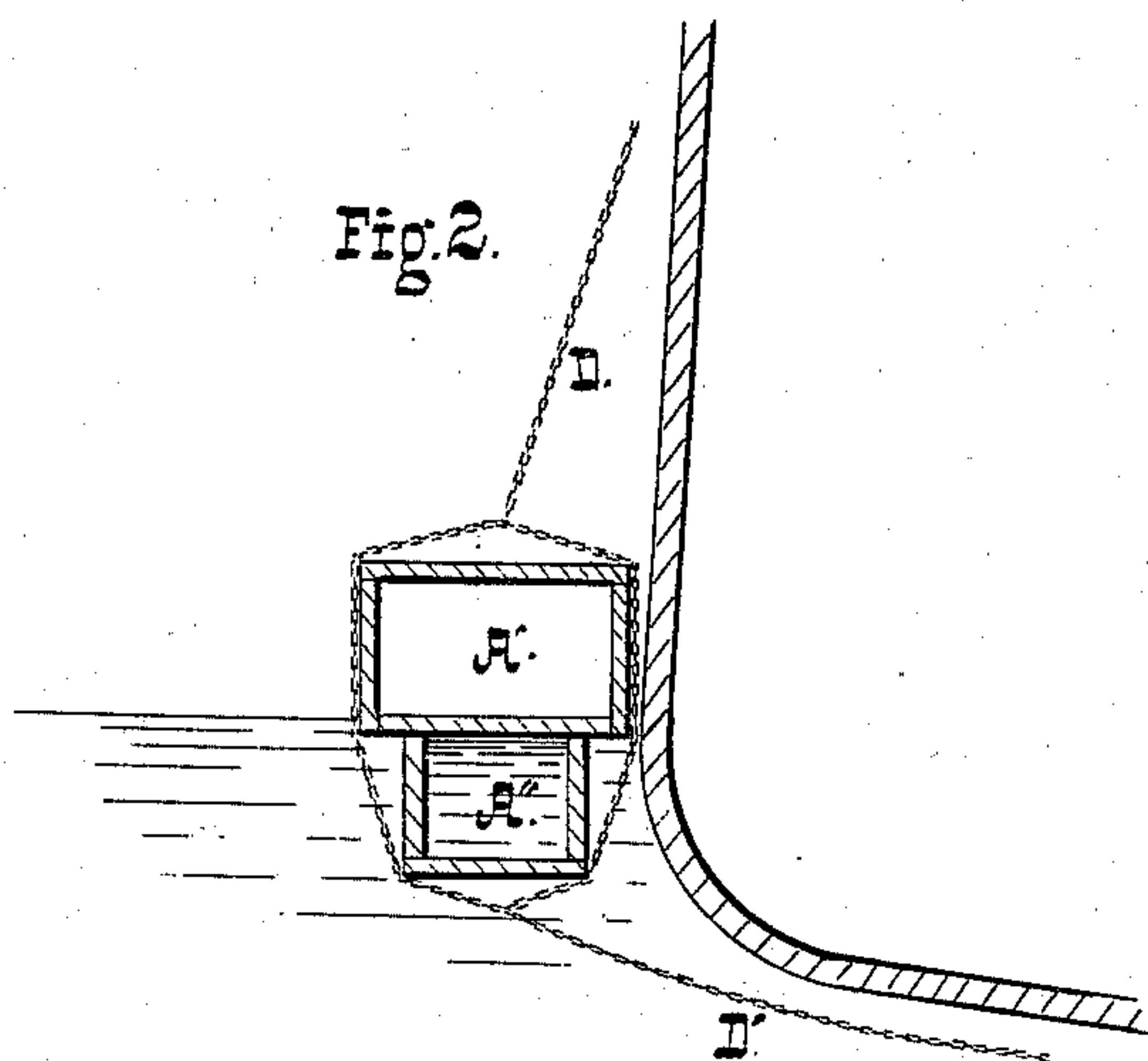
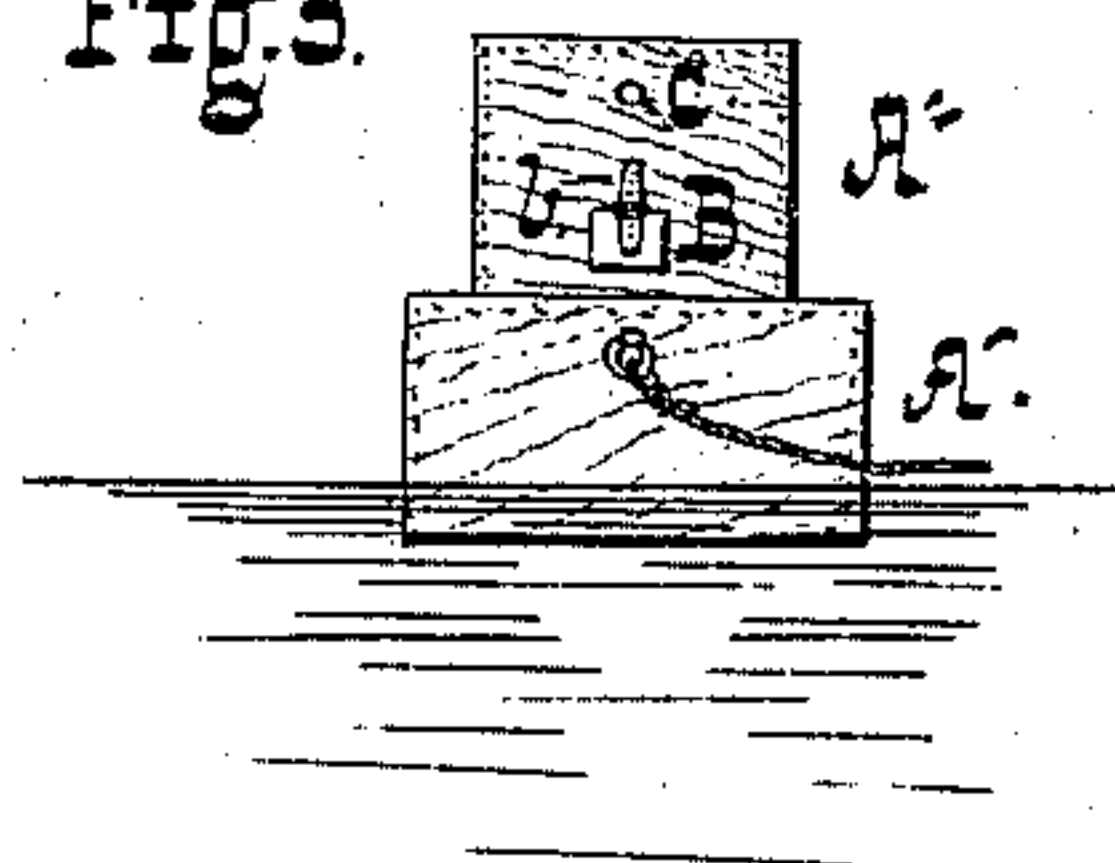


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN H. BARNES, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-HALF OF
HIS RIGHT TO DOMENICO GATTO, OF SAME PLACE.

HARBOR-BALLAST FOR SHIPS.

SPECIFICATION forming part of Letters Patent No. 232,435, dated September 21, 1880.

Application filed July 27, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. BARNES, of Baltimore city, State of Maryland, have invented certain new and useful Improvements in Harbor-Ballast for Ships; and I hereby declare the same to be fully, clearly, and exactly described as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a central longitudinal sectional view of a ballast-vessel embodying my invention. Fig. 2 is a transverse sectional view of the same, and Fig. 3 is an end elevation of the device.

My invention relates to what are technically known as "ballast-logs," designed to be fastened alongside of ships in port in order to prevent them from careening after or pending the discharge of the cargo. Devices of this class become, in nearly every case in which a ship is emptied, in preparing to take on a heavy cargo, such as railroad-iron or ores, an absolute necessity, as ships can rarely, and those hailing from Italian or other Mediterranean ports never, be relied upon to float upright when empty. These devices have heretofore consisted of heavy logs or empty casks, which were fastened alongside, and prevented the ship from listing, respectively, by their weight or buoyancy. Both were objectionable, however, by reason of the fact that a log or cask was needed on each side of the ship, as the log will not prevent the ship from careening toward it nor the cask away from it; and as the ship is nearly always alongside of a wharf or pier to receive cargo, the presence of the log or cask between the ship's side and the wharf was undesirable, both by reason of the necessity for a long gang-plank, and because of the danger of injury to the log and the certainty of crushing the cask. It has been proposed, in order to overcome this difficulty, to construct the logs of two materials, a heavy wood base of teak being bolted to a cork or other light superstructure; but such a log would be so expensive and difficult to tow from place to place as to outweigh any advantage arising from its peculiar construction.

My present invention is an embodiment of the advantages of all the above-described devices, while avoiding the disadvantages of each;

and it consists in a ballast-vessel constructed and operating as hereinafter set forth.

In the accompanying drawings, A is the vessel, consisting of two parts, A' A''. The normally upper one, A', is divided into a number of compartments by bulk-heads *a'*, and each compartment is provided with a covered man-hole, *a*, to gain access to the interior for calking, the compartments being made airtight. The lower part, A'', is somewhat smaller in cross-section than the upper one, as shown, the design being that its weight when filled with water, in addition to the weight of the upper part, shall just equal the buoyant effort of the entire device when submerged. The part A'' has holes near the base at either end, fitted with plugs C, and has also one or more outwardly-opening doors, B, hinged to the outside at *b*. Counterpoises *c* normally hold these doors close to their seats. Instead of the doors, the part A'' may have a number of permanent openings close to the central partition; but the described construction is preferred for a reason that will be presently evident.

In operation the part A'' is filled with water and the plugs C and doors B are seated close. The device is then made fast to the ship by means of chains or ropes D D', led respectively on deck and under the keel and up the other side of the ship. As the ship settles in the water while the cargo is being taken in, the chain D' is paid out and the slack of the chain D is taken up. When the ship is sufficiently laden to stand alone a fall is made fast to the bight of the lower chain, D', which being hove in, the entire ballast-vessel is capsized and the doors B automatically open and discharge the water. The device then floats lightly, as shown in Fig. 3 of the drawings, and may be readily towed away with a skiff. When it is desired to use it again the plugs C are removed, the vessel is capsized and allowed to fill.

A scuttle, *a''*, is made in the lower part, A'', immediately beneath the man-hole in the upper part, as shown. The object of this construction is to admit of the device being used as a fresh-water tank to supply ships. In this case a hose is lowered over the side of the ship into the lower tank, and its contents are

then pumped into the ship's casks. When it is not designed to use the ballast-vessel as a fresh-water tank, as hereinbefore indicated, a number of permanently open holes close up
5 under the central partition may be substituted for the doors B.

The advantages of the device over others heretofore used for the same purpose are evident. It may be cheaply constructed, is light
10 and easily towed about, and it answers the end both of the log and cask, the ship being efficiently ballasted from one side only.

The object of making the air-chamber broader than the water-tank is to cause the device to float upright when capsized and pending the discharge of the water.
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What I claim is—

1. A ballast-vessel consisting of a lower water-tank and an upper air-compartment, having chains or ropes for securing it in position
20 at a ship's side, as set forth.

2. A ballast-vessel consisting of a lower wa-

ter-tank and an upper air-compartment, having suitable securing chains or ropes, as described, the device being adapted, upon being
25 inverted, to discharge the contents of the water-tank, as set forth.

3. The ballast-vessel described, consisting of the water and air chambers, rectangular in cross-section, and of such relative size that the
30 buoyant effort of the device when submerged shall substantially equal its weight, as and for the purpose set forth.

4. The ballast-vessel described, consisting of an air-tight air-chamber and a water-tank
35 having valved openings that discharge its contents as the vessel is inverted, and chains or ropes for securing the device alongside a ship, as set forth.

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