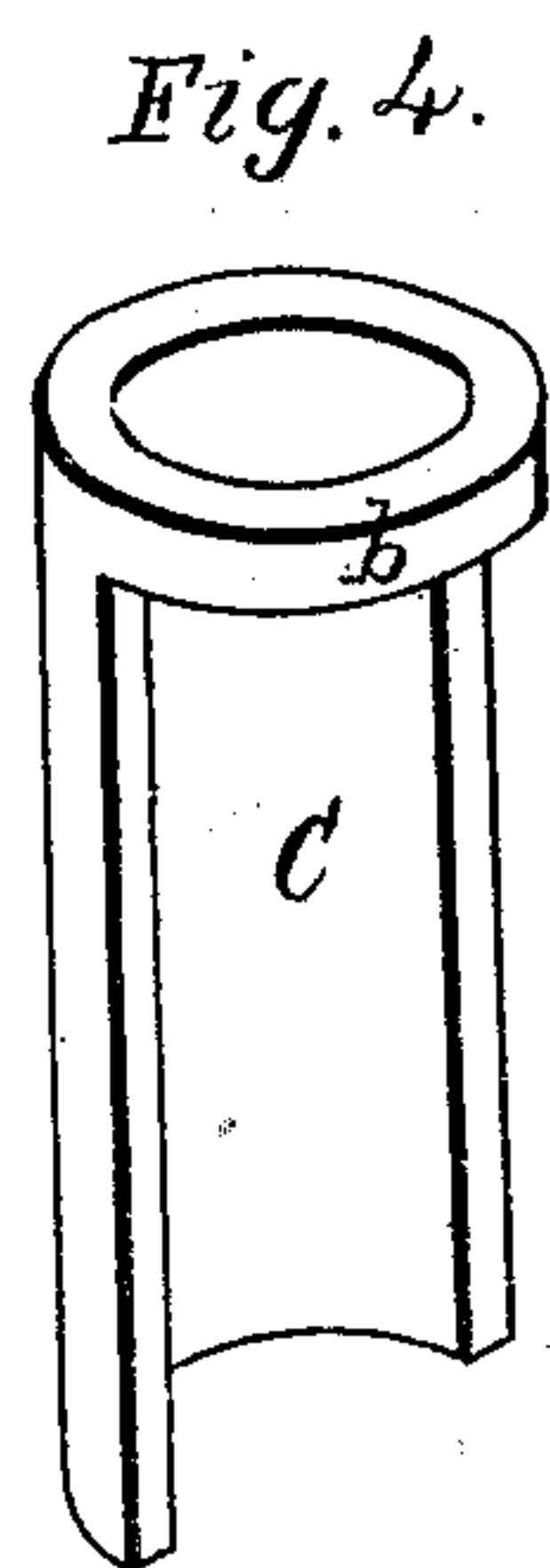
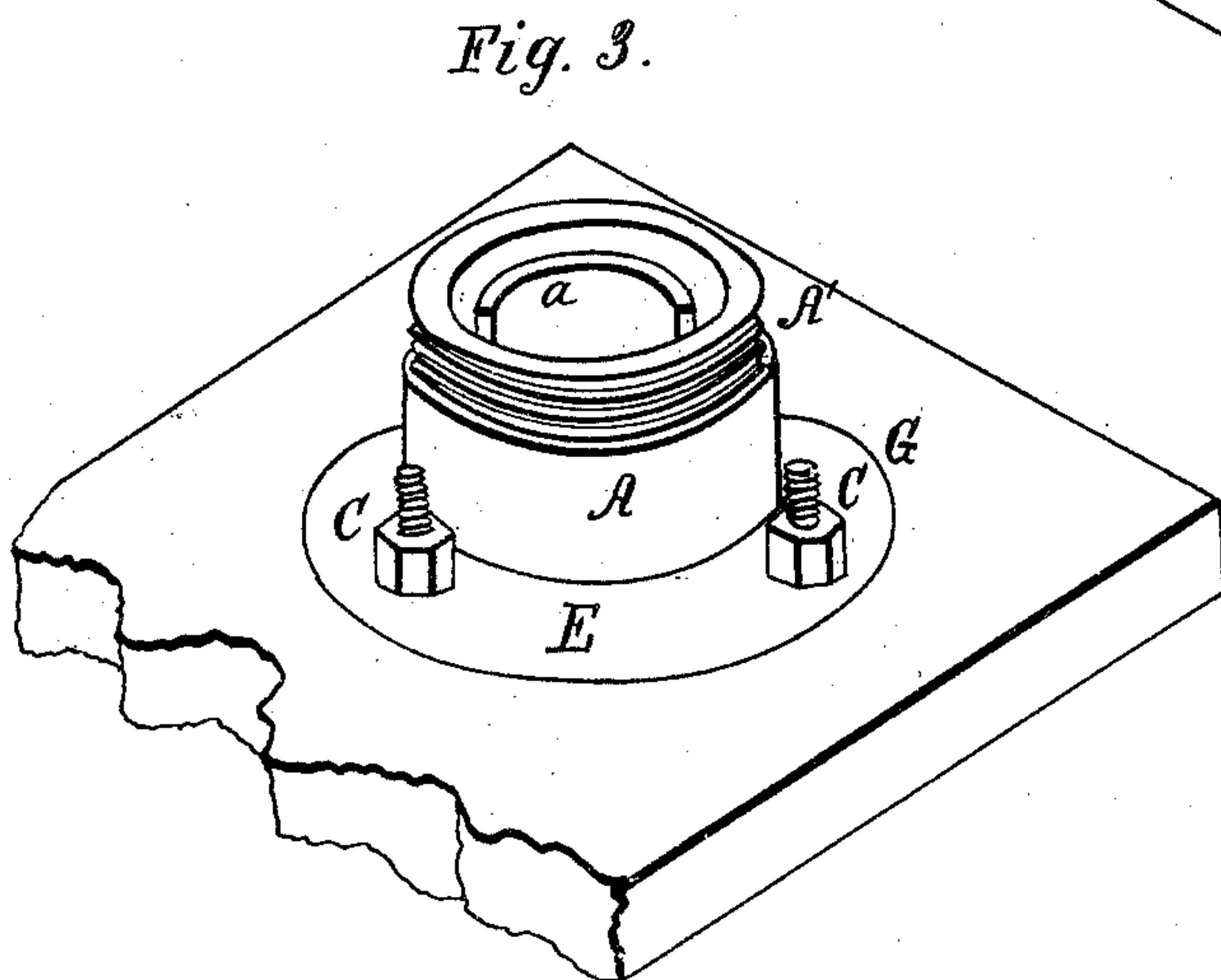
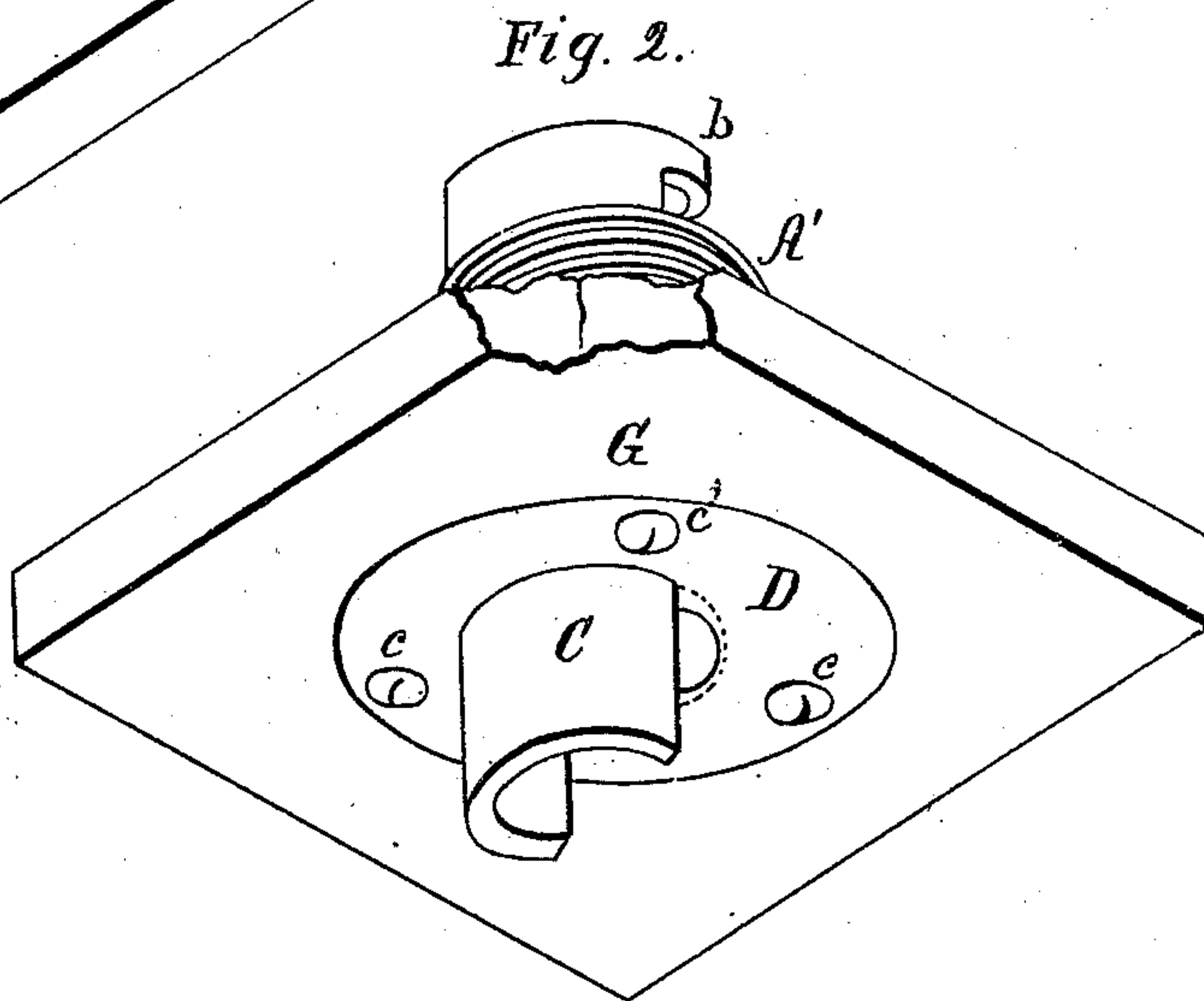
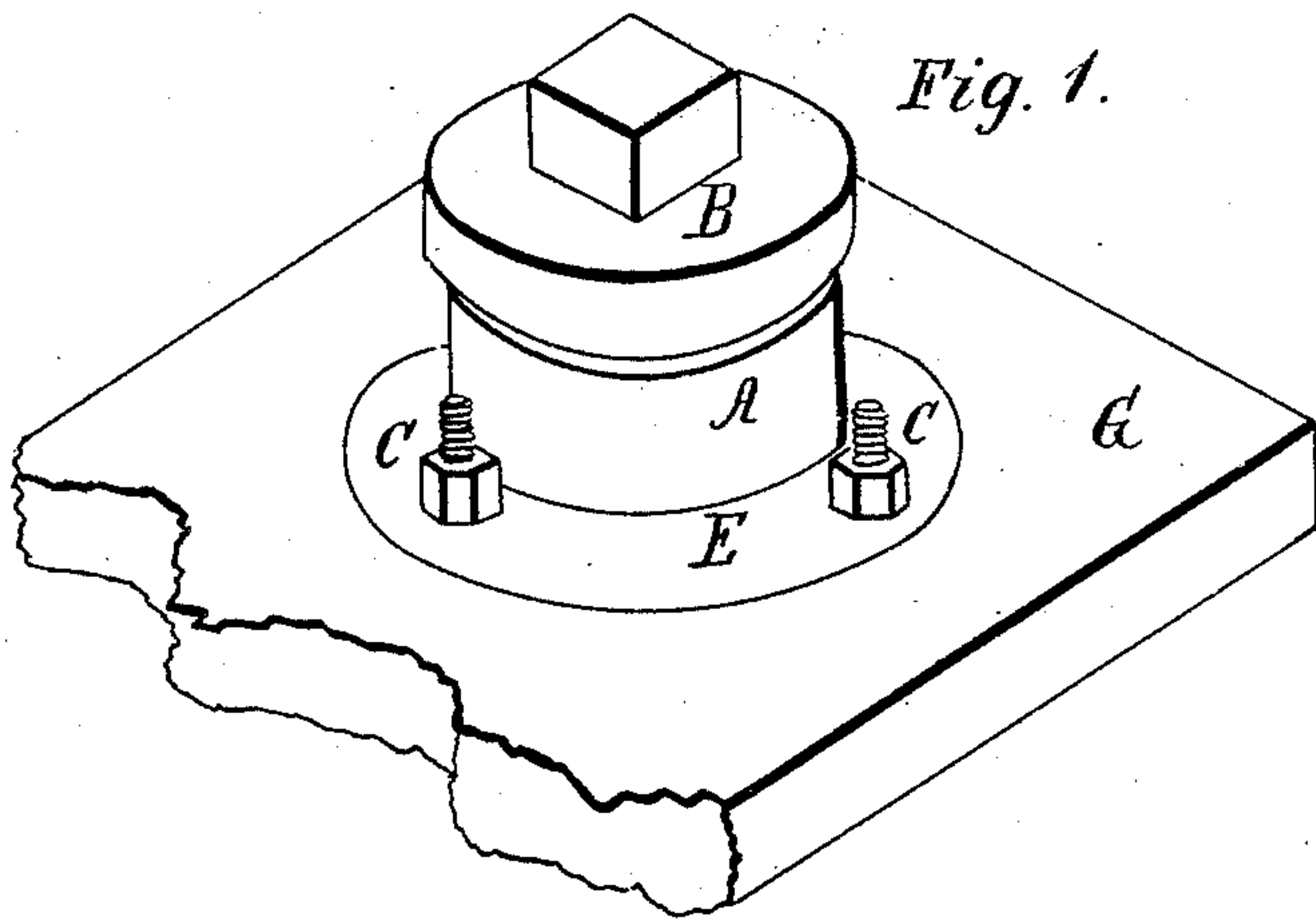


T. W. Fox,
Bilge Water Discharging.
Nº 55,480. Patented June 12, 1866.



Witnesses.

Wm. F. Noyes
R. Fitzgerald.

Inventor.

Thomas W. Fox

UNITED STATES PATENT OFFICE.

THOMAS W. FOX, OF NEW LONDON, CONNECTICUT.

IMPROVED DEVICE FOR EXPELLING WATER FROM THE HOLDS OF VESSELS.

Specification forming part of Letters Patent No. 55,480, dated June 12, 1866.

To all whom it may concern:

Be it known that I, THOMAS W. FOX, of the city and county of New London, in the State of Connecticut, have invented a new and useful Improvement in Apparatus for Expelling Water from the Inside of Sailing or Steam Vessels while the vessel is moving ahead; and I do hereby declare that the following is a full, clear, and exact description of the construction, character, and operation of the same, reference being had to the accompanying drawings, which make part of this specification, in which—

Figure 1 is a perspective view of the tube part of the apparatus as taken from above, and shown as fitted into a section of one of the planks of the bottom of the vessel, and with the cap screwed on as it will be when not used, as when the vessel does not leak or is not moving. Fig. 2 is a perspective view of the same as taken from below, with the cap removed, and the semi-cylindrical vacuum-producer inserted, though elevated above its proper position. Fig. 3 is a perspective view of the same as taken from above, with the cap and semi-cylindrical vacuum-producer removed, showing the shoulder on which the vacuum-producer rests. Fig. 4 is a perspective view of the semi-cylindrical vacuum-producer, the same as shown at C b, Fig. 2.

My improvement consists in fitting one or more tubes with semi-cylindrical vacuum-producers into the bottom of the vessel in such a manner that it will cause the water which has, by leakage or other means, found its way into the vessel to pass out into a partial vacuum, which will be formed or produced at all times when the vessel is running ahead and the vacuum-producer is in its proper position for that purpose, as hereinafter described, and the cap removed.

I make the cylindrical tube A, Figs. 1 and 3, of an alloy or composition of metal best suited for its firmness and least liable to be corroded by the action of the water, as of bronze, gun-metal, or any other suitable material; and on the upper end of this tube I cut a male screw, as represented at A', Figs. 2 and 3, onto which I screw a cap, as shown at B, Fig. 1, so as to secure it water-tight when it is not in use, as when the vessel does not leak or is lying still or is going astern. In the in-

side of this cylindrical tube A, I fit or cast a semi-cylindrical-piece not reaching quite to the top, as shown at a, Fig. 3, on which a portion of the annular part b of the semi-cylindrical vacuum-producer C is to rest when it is in its proper position for use—that is, when it is in the position shown in Fig. 2—except that it is let down so that its top b will be level with the top of the screw A', Figs. 2 and 3. I cast this tube A with a flange at its lower end, or that which is to be outside or in the water, as shown at D, Fig. 2, to enable me to fit it water-tight in or through the bottom of the vessel G, Figs. 1, 2, and 3, by means of screws, as shown at c c c, Fig. 2, passing through the loose flange or annular disk E on the inside of the planking, or other material of which the bottom of the vessel is constructed, as shown at e and e, Figs. 1 and 3, or by any other means.

I make the semi-cylindrical vacuum-producer C of bronze, gun-metal, or any other suitable material, the same as the tube A, substantially in the form shown at C b, Fig. 4, and, as indicated at C b, Fig. 2, so as to fit the tube A, and then project beyond it, as represented at C, Fig. 2, so as to be immersed in the water below the bottom of the vessel, with the convex side C, Fig. 2, toward the bow, and the part b, Figs. 2 and 4, resting on the semicircular shoulder projection at a, Fig. 2, (being dropped down from its position in Fig. 2.)

Having made the parts as before described, I make a suitable hole in the bottom of the vessel through the plank or other material, as G, Figs. 1, 2, and 3. I then insert the tube A from the under or outer side of the bottom, so that the flange D will come up and fit against or into the plank, as indicated in Fig. 2, taking special care so to place it that when the semi-cylindrical vacuum-producer is inserted it will have its convex surface, as C, Fig. 2, toward the bow of the vessel. I then put on the loose flange or annular disk E, and put in the screws c c c, when it will appear on the inside of the vessel as shown in Fig. 3, and on the outside as shown at D G c c c, Fig. 2, and when not wanted for use I screw on the cap B, when it will appear on the inside as represented in Fig. 1, in which condition it may remain until the vessel leaks or otherwise takes in water too much or too rapidly to be easily removed by the pumps, in which case, while the vessel is run-

ning forward, I remove the cap B and insert the semi-cylindrical vacuum-producer, Fig. 4, as represented in Fig. 2, except that I let it down till its top will coincide with the top of the screw, A', Figs. 2 and 3, and with its convex surface C, Fig. 2, toward the bow of the vessel.

I would recommend that this vacuum-producer be made a perfect semi-cylinder, that shape being evidently the best, and that its lower end be immersed in the water below the bottom of the vessel to the extent of the diameter of the cylinder. Other proportions may be used, but I think not so beneficially.

Any desired number of these expellers may be used in a vessel, and they may be made of any desired size.

When the vessel is running ahead through the water, the part C, Fig. 2, by passing with its convex surface forward will leave a partial vacuum behind it, into which the water which is in the vessel will fall, and will so continue as long as the vessel has headway; and when the vessel ceases to run ahead so as to form

a vacuum, the cap B must be screwed on water-tight.

From experiments I am led to believe that when a vessel is running through the water at the rate of six miles per hour, two of these tubes, &c., will expel the water as fast as it would leak or enter through a hole or fissure of the capacity of one of the tubes, and, of course, the faster the vessel passes through the water the faster the water will be expelled from the inside, because the vacuum will be nearer perfect.

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

The combination of the semi-cylindrical vacuum-producer, Fig. 4, with the tube A, when they are constructed, fitted together, attached to the vessel, and used substantially as herein described and set forth.

THOS. W. FOX.

Witnesses:

WM. F. NOYES,

R. FITZGERALD.