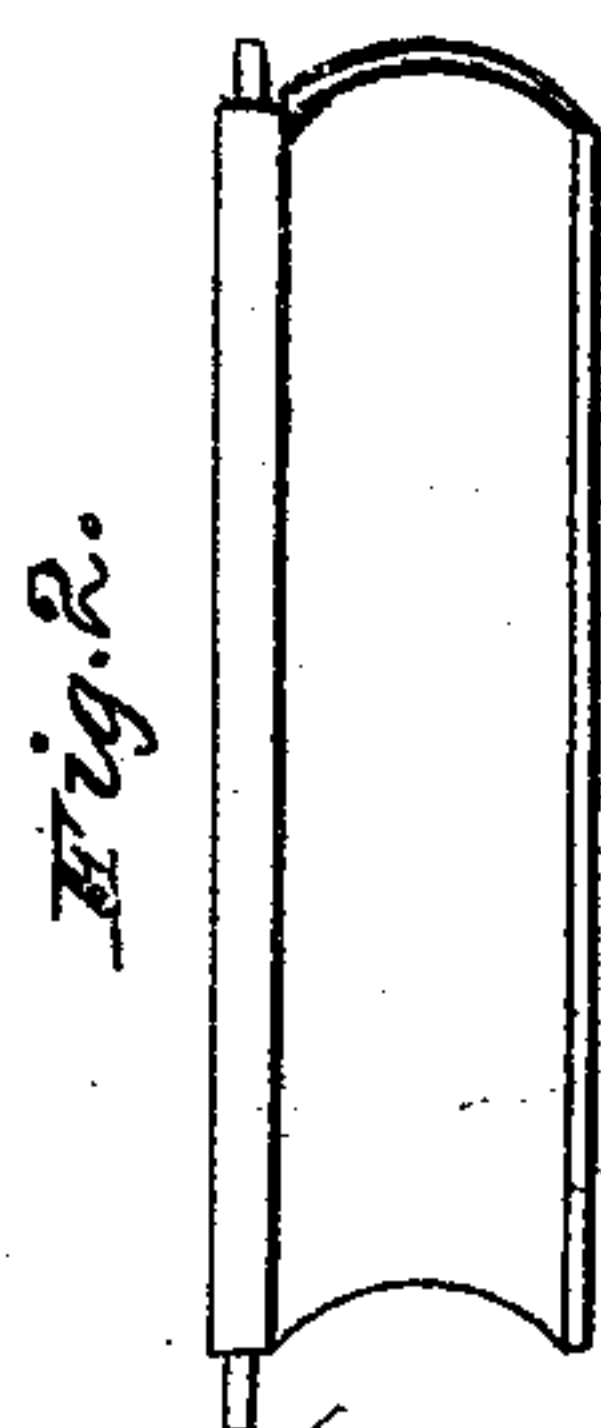
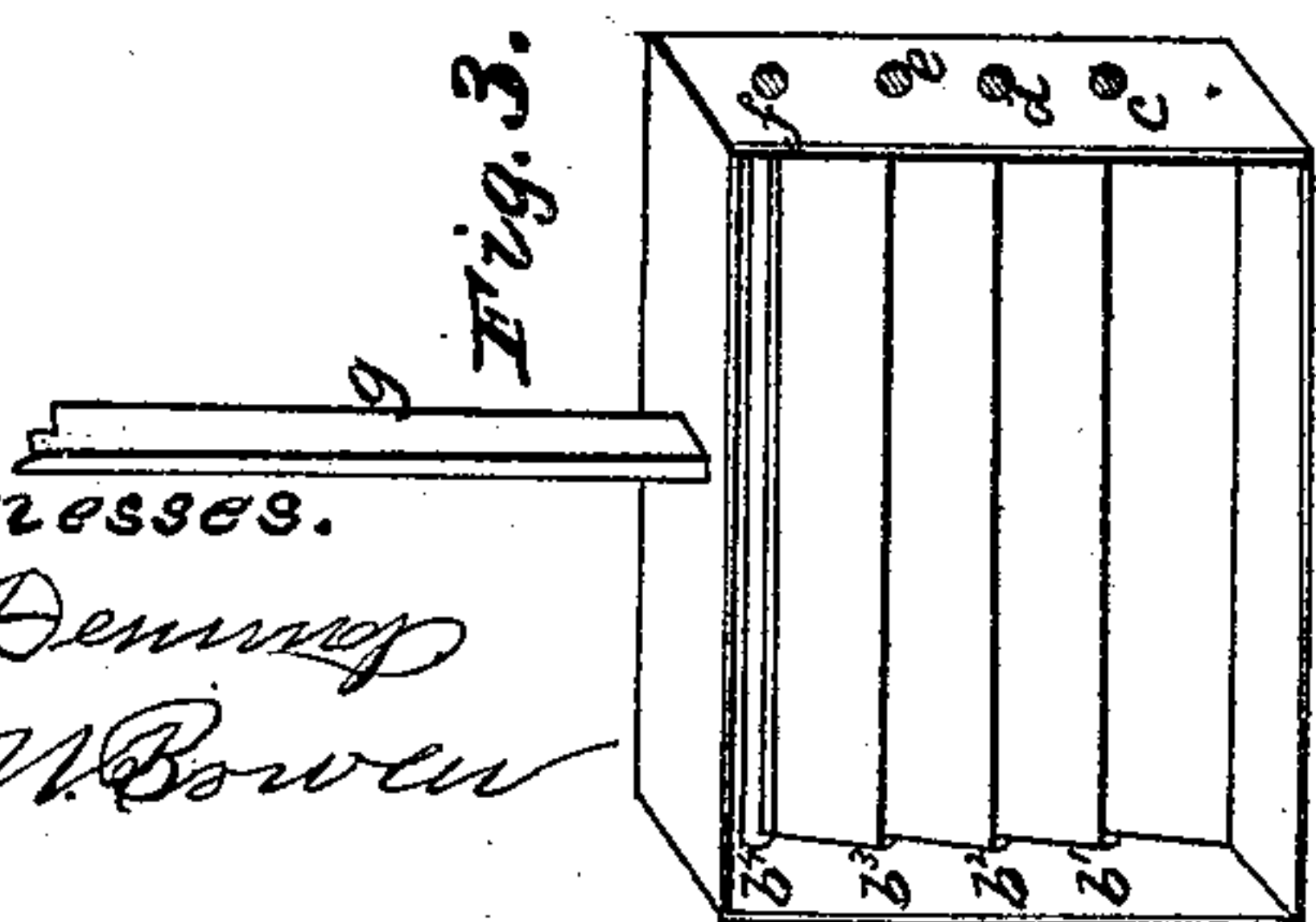
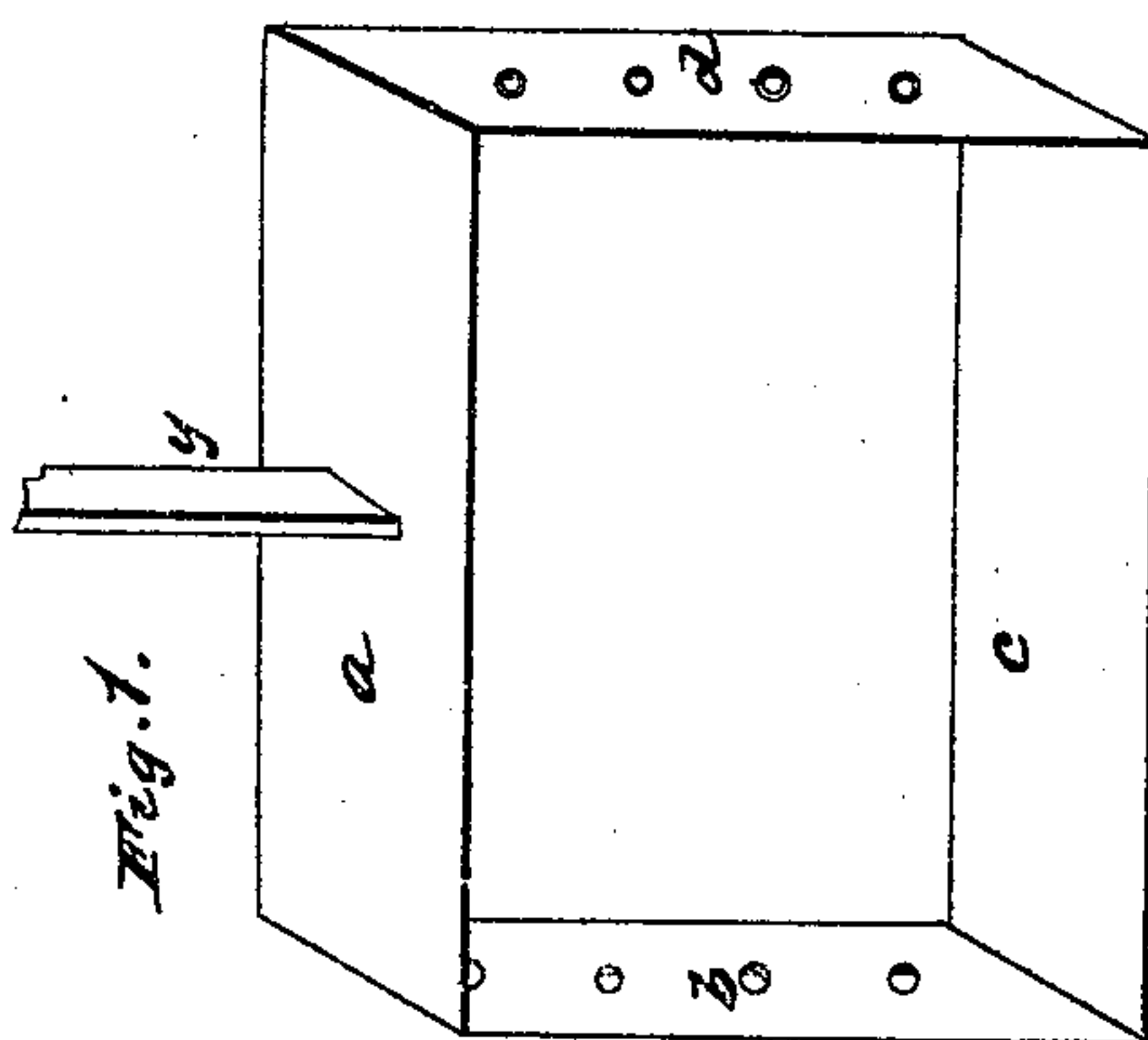
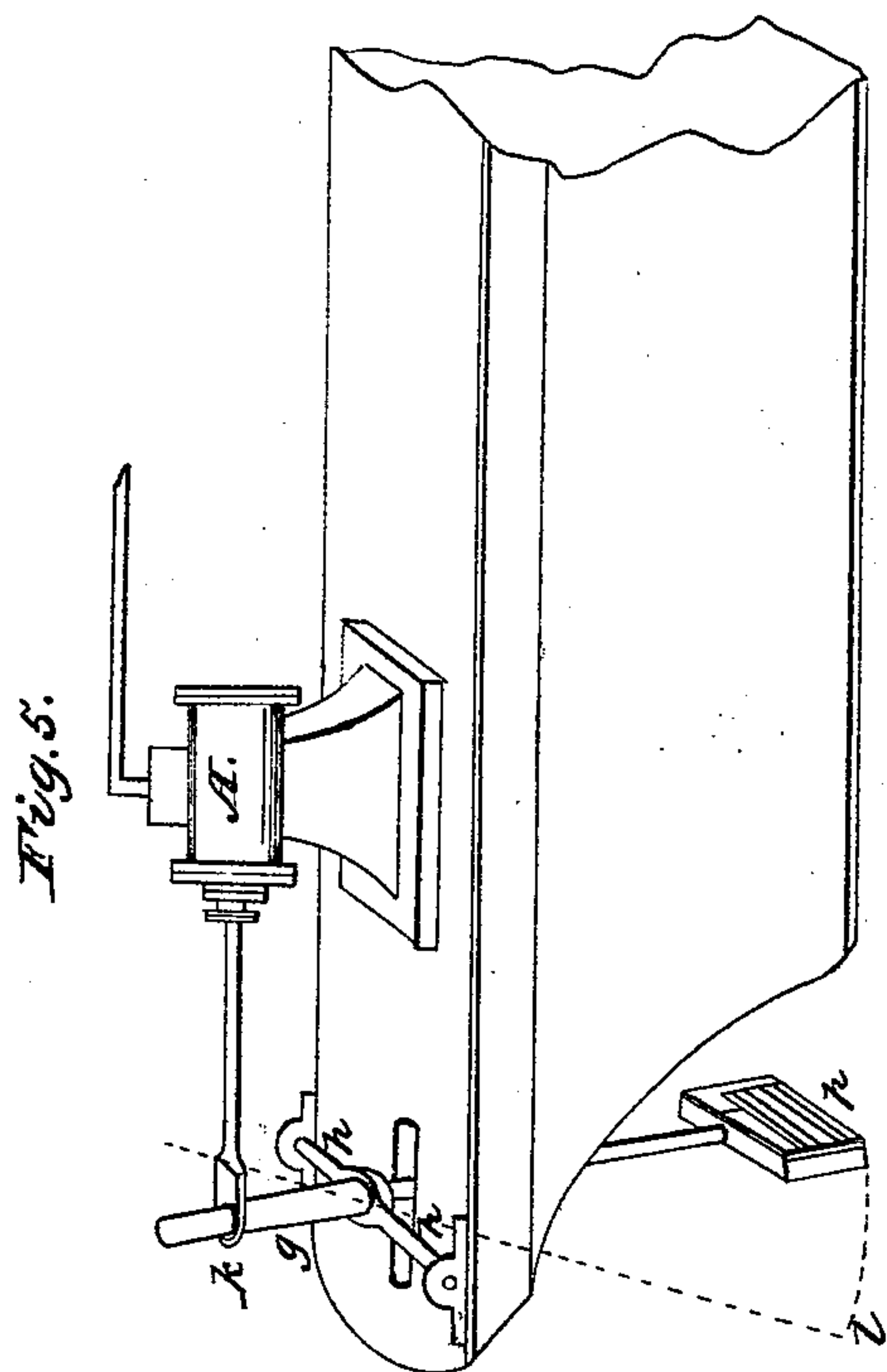
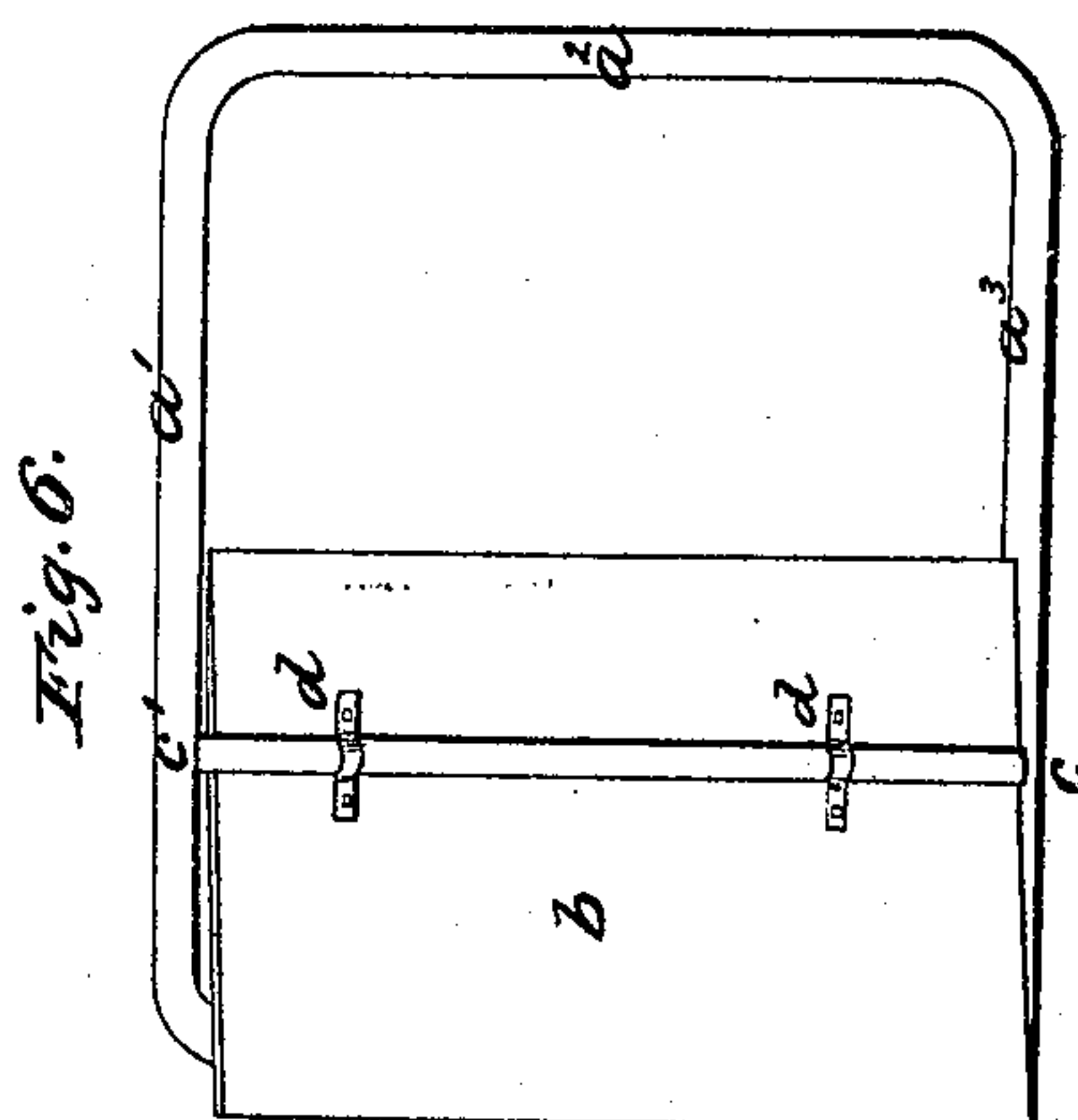
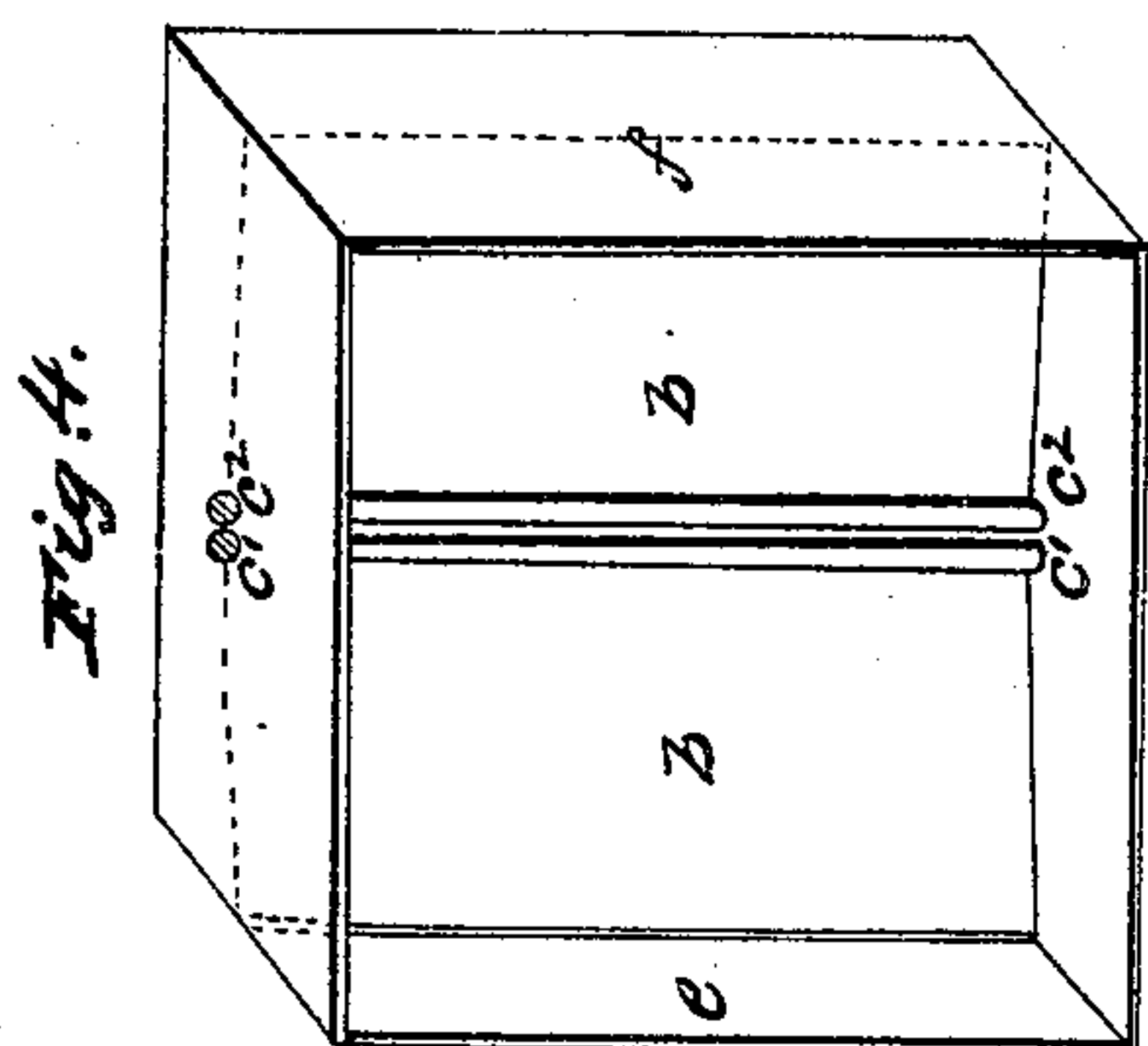


R. Hunter. Vibrating Propeller.

N^o 80,960.

Patented Aug. 11, 1868.



Witnesses.
G. B. Deming
J. E. M. Bowen

Inventor.
Robert H. Hunter.
By Knight, Ross & Atty.

United States Patent Office.

ROBERT HUNTER, OF NEW YORK, N. Y.

Letters Patent No. 80,960, dated August 11, 1868.

IMPROVEMENT IN PROPELLERS.

The Schedule referred to in these Letters Patent and making part of the same.

Be it known that I, ROBERT HUNTER, of No. 9 Brevoort Place, in the city of New York, doctor of medicine, have invented an Improved Propeller for steam-vessels, canal-boats, and other vessels; and I hereby declare that the following is a true and exact description thereof, reference being made to the accompanying drawings.

Figure 1 represents one form of the propeller.

It may be made either square, oblong, round, or octagonal.

$a b c d$ represent four sides of a frame or chamber, within which may be arranged two or more floats.

The best form and construction of these floats are seen in Figure 2.

In Figure 3 the axes $b b^1 b^2 b^3 b^4$, vibrate in journals $e d e f$, for one-quarter of a circle, and are so arranged that the lower edge of each float shall rest over the axle immediately below it.

The object of this arrangement is to give the floats as much support as possible while impinging against the water.

Figure 4 represents a different arrangement of the floats in the propeller.

The floats a and b are hung on vertical axes, $c^1 c^2$, (or one vertical axle may be common to both,) so as to operate horizontally. These floats must be made of sufficient length to rest on or against the sides of the frame e and f . The surface of these floats may be made straight or slightly curved. I prefer the latter form, as giving a firmer hold on the water, as shown in fig. 2.

Either of the above-described forms of the propeller must be rigidly attached to the lower extremity of a vertical lever, g , figs. 1 and 3, which swings or oscillates on the axis h , Figure 5, or the lever may be attached to an axis which partially revolves in its journals, or the axis may be enlarged in the centre to permit the lever to pass through it, and move with the lever h , as shown in fig. 5.

When the lever g , fig. 5, is operated by a horizontal engine, A , fig. 5, attached to its upper extremity, K , the lower end, armed with the before-described propeller, will oscillate between the points p and l .

Figure 6 represents a different description of the frame, and may be made of any desirable shape.

$a^1 a^2 a^3$ is a frame of round iron. $c c$ is the axle of one of the floats, placed one-third the width of the float from the centre. The axle is immovably fixed to the frame, and the float vibrates around it. The axle may be placed at a less distance than one-third the width of the float from the centre of the frame, or at any distance greater than one-third, less than one-half. The frame may also be diminished in size, so as to cause the floats to overhang to a greater extent. Either of these frames may be made of any desirable shape, and used with a single float hung or firmly secured to a horizontal or vertical axis by one edge, or at any point which is less than half the distance from the centre of the float. In boats of small tonnage, the single float will be found the cheapest, and equally as efficient as two or more floats.

The object sought to be obtained by this invention is a propeller, which feathers by self-action, when moved in the line of the vessel's motion, and closes by self-action when moved in the opposite direction, whereby the least and greatest possible resistance from or against the water is respectively obtained.

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

The oscillating-lever g , adapted to be turned upon its axis for reversing, in combination with a pivot-float propeller, substantially as and for the purposes stated.

New York, June 27, 1868.

ROBERT HUNTER.

Witnesses:

K. BARTON,

R. O. HUNTER.