

J. E. WALSH.

Coffer Dam.

No. 111,157.

Patented Jan. 24, 1871.

Fig. 1.

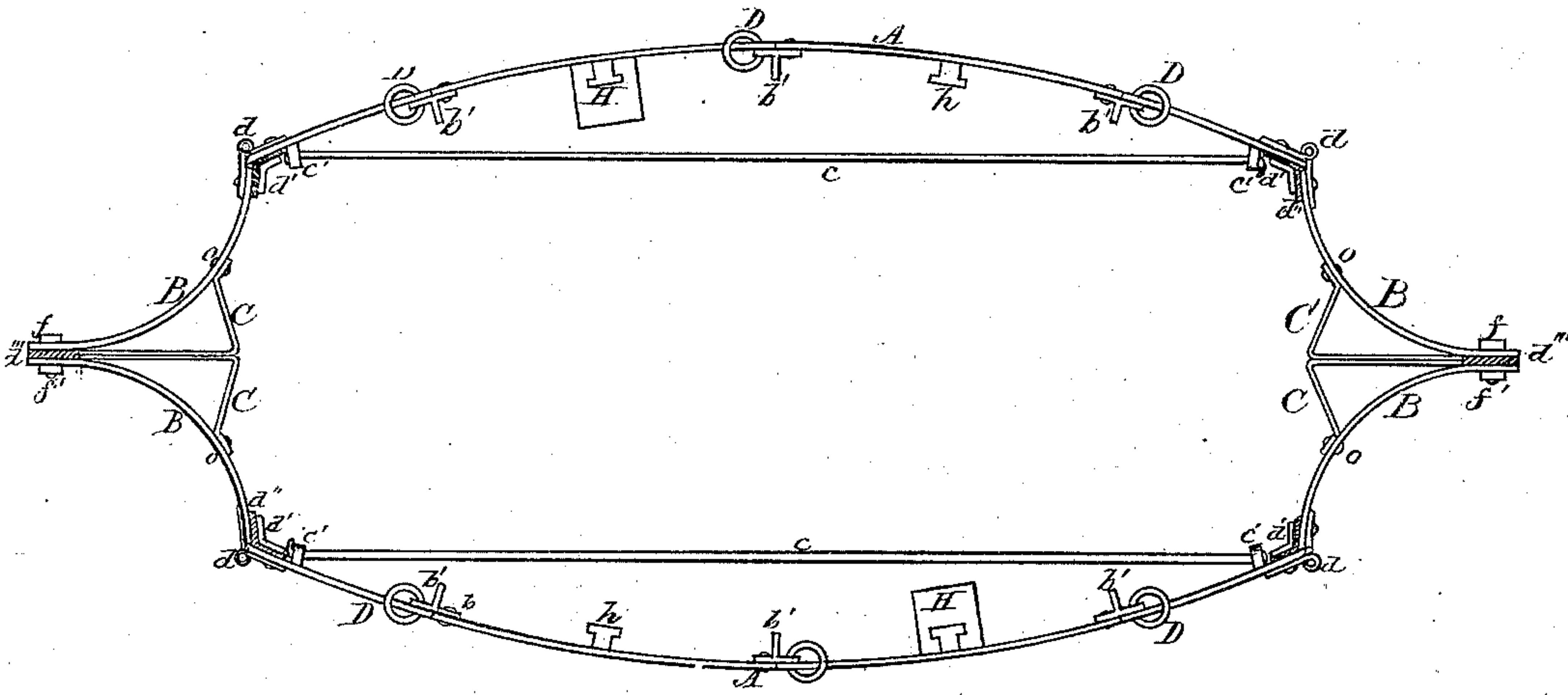


Fig. 2.

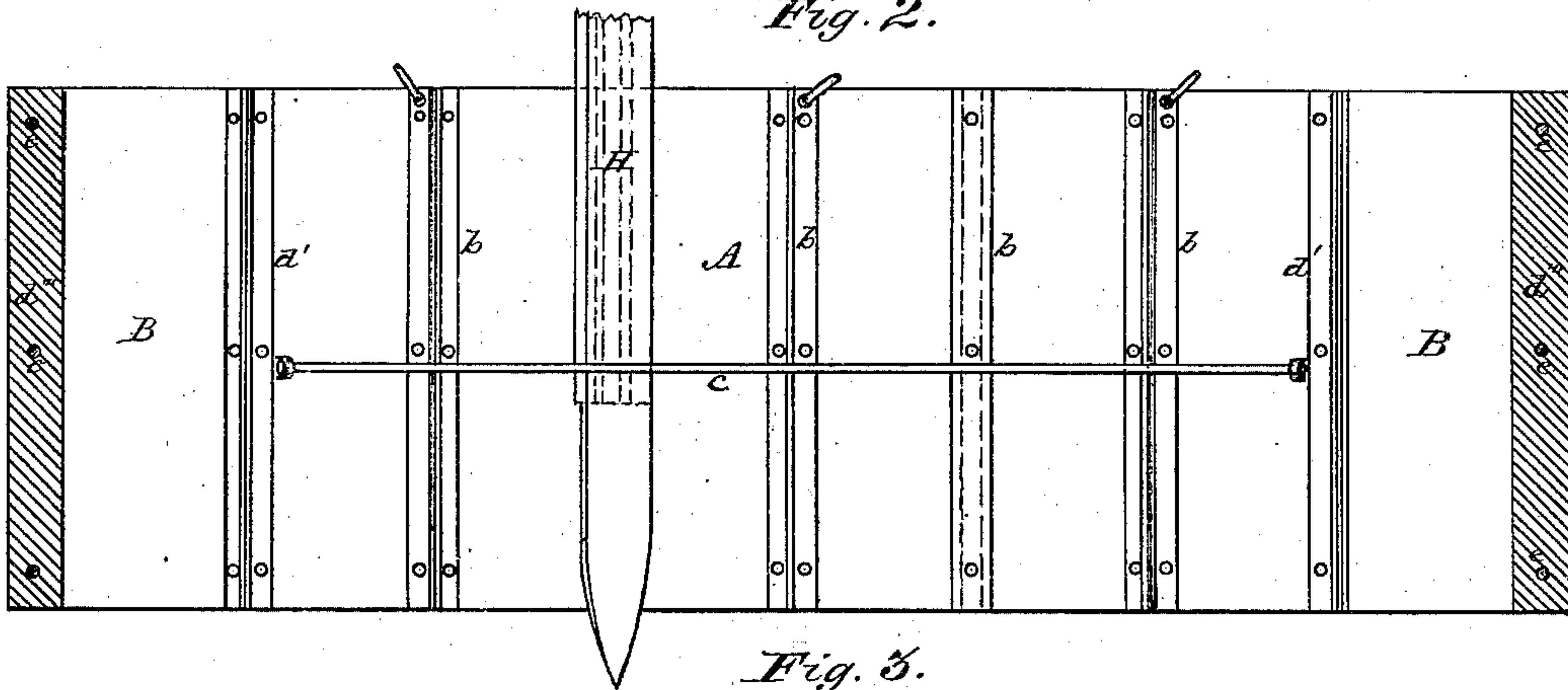
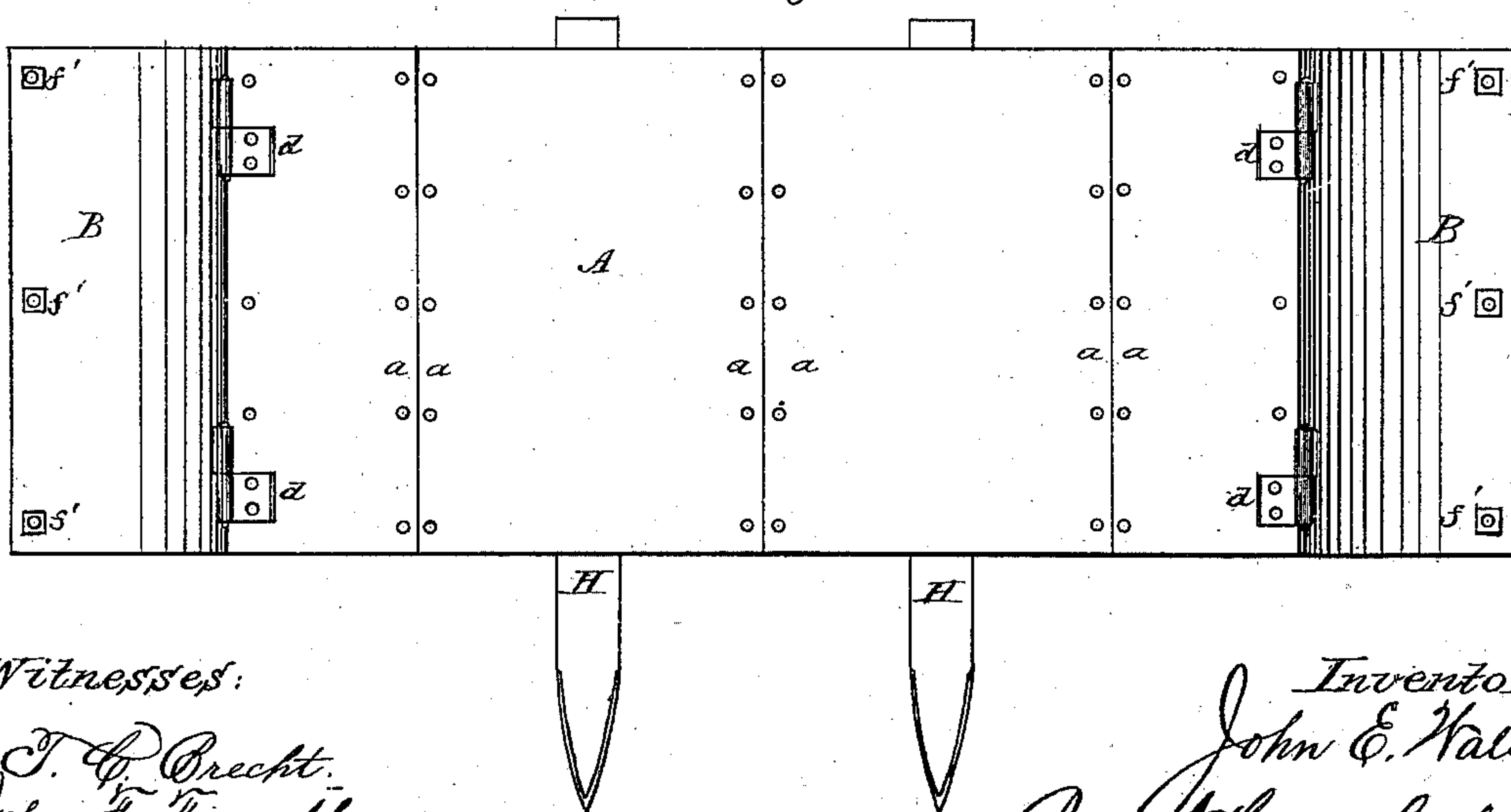


Fig. 3.



Witnesses:

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# United States Patent Office.

JOHN E. WALSH, OF NEW YORK, N. Y.

Letters Patent No. 111,157, dated January 24, 1871.

## IMPROVEMENT IN COFFER-DAMS.

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

I, JOHN E. WALSH, of the city, county, and State of New York, have made certain Improvements in Coffe-Dams, of which the following is a specification.

The object of this invention is to furnish a better and more secure coffer-dam in which piers or other structures are built under and below the surface of water, that can be easily moved and sunk in its place, and be as easily removed when desired, and that shall be water-tight; and

It consists in the construction of some of the parts of the shell that form the coffer-dam and in the structure as a whole.

In the drawing—

Figure 1 represents a top view of the coffer-dam;

Figure 2, an upright longitudinal sectional view of the inside; and

Figure 3, an upright longitudinal sectional view of the outside of the same.

A represents the walls of the coffer-dam, constructed from metal plates *a*, of any convenient size and shape, which are joined together by riveting the plates to upright braces *b*.

Braces *b* are strengthened in a lateral direction by having a flange, *b'*, project centrally of its width a sufficient distance to give the required strength to resist the external pressure.

The side walls are curved so that the transverse diameter is considerably greater in the center of the length of the side walls than at their extreme ends.

This curvature is retained in the side walls by means of the screw or hook-rods *c c* that extend longitudinally the entire length of the side walls, and are made fast at their ends to inwardly-projecting lugs *c' c'*, which are secured in the side walls near their shoulders or extreme ends, and by such curvature the side walls will resist a much greater external pressure than if made straight, as is usually the case.

B B are inwardly-curved swinging doors, hung to the shoulders of the side walls, by hinges *d*, in such manner as that the doors shall swing outwardly.

At the hinged joint between the doors B and the side walls A, and on the inside thereof, are angle-irons *d'*, formed to fit on one angle of the curvature on the side walls, and on the other the inward curvature of the doors.

Between the angle-irons *d'* and the side walls A on one side, and the doors on the other, is interposed rubber-packing *d''*.

In order to strengthen the doors B, bent metal plates O are bolted fast to their inner sides, as seen in fig. 1 at *o*, and extending inwardly at an angle from a direct line until they nearly meet when the doors are closed; they are then bent to conform to a line drawn from between the extreme outer ends of the doors at one end to that of the other, and go parallel

with each other to a short distance of the out ends of said doors, where they terminate, but are not made fast at their outer ends to the sides of the curved doors.

At the outer or abutting edge of the doors rubber packing *d''* is interposed, which packing is equal, or about equal, in thickness to the two plates O at their outer ends.

Near the outer edges of the doors is a sufficient number of screw-bolt holes *e* to hold them in firm contact, when desired, by means of the screw-bolts *f* and nuts *f'* that pass through the door-plates and rubber packing, compressing the packing to a joint that will exclude the water, and also compress the loose outer ends of bent plates O together the whole length of their parallel sides, and form, by this means, a kind of flexible supporting braces to the doors.

For the convenience of lowering the coffer-dam, or the one-half of it, into the position it is to occupy in building a pier or excavating the foundation of a pier, or for any other purpose where a coffer-dam would be used, suspending-rings D are inserted through the metal walls and braces, into which the suspending devices can be attached or hooked, and the structure raised or lowered, as the case may be.

When the coffer-dam is lowered into its proper place it is necessary to secure it in such position and guard against its being moved out of such place by strong currents in the water, or by other causes.

This is accomplished by firmly bolting or otherwise securing T-shaped braces *h* upon the side walls, which may be made of metal or other sufficiently strong and proper material, and having a sliding pile, H, longer than the height of the side walls, with a groove in one of its sides that will fit over the T-brace and freely slide vertically thereon, which is driven down into the ground below the bottom of the coffer-dam, and securely holding it in place.

By constructing the coffer-dam in the form herein described and shown, the pressure of the water upon its walls has the tendency and does act to compress the parts together and keep the joints close, thus materially strengthening the structure as a whole when in and surrounded by water, consequently a coffer-dam can be constructed of thinner plates, have less weight, and costing less in the aggregate than if having parallel sides on right lines.

I am aware that metal has been used in the construction of coffer-dams, and I lay no claim to its use. I am also aware that doors or gates and their joints packed with a flexible substance are in use, and I do not broadly claim these; but

Having thus described my invention,

What I do claim, and desire to secure by Letters Patent, is—

1. The bent plates C, bolted at one end only to the inwardly-curved doors B, in the manner and for the purpose shown.

2. The angle-iron  $d'$  and packing  $d''$ , in combination with the inwardly-curved hinged doors B, having flexible bent metal plates C, interposed packing  $d'''$ , bolts  $f$ , and nuts  $f'$ , all constructed and arranged to operate in the manner described.

3. The coffer-dam herein described, composed of the

outwardly-curved side walls A, strengthened by rods  $c$ , inwardly-curved hinged doors B, having the flexible bent metal plates C, packing  $d''$  and  $d'''$ , and angle-irons  $d'$ , all the parts constructed and arranged together in the manner and for the purpose shown.

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Witnesses:

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