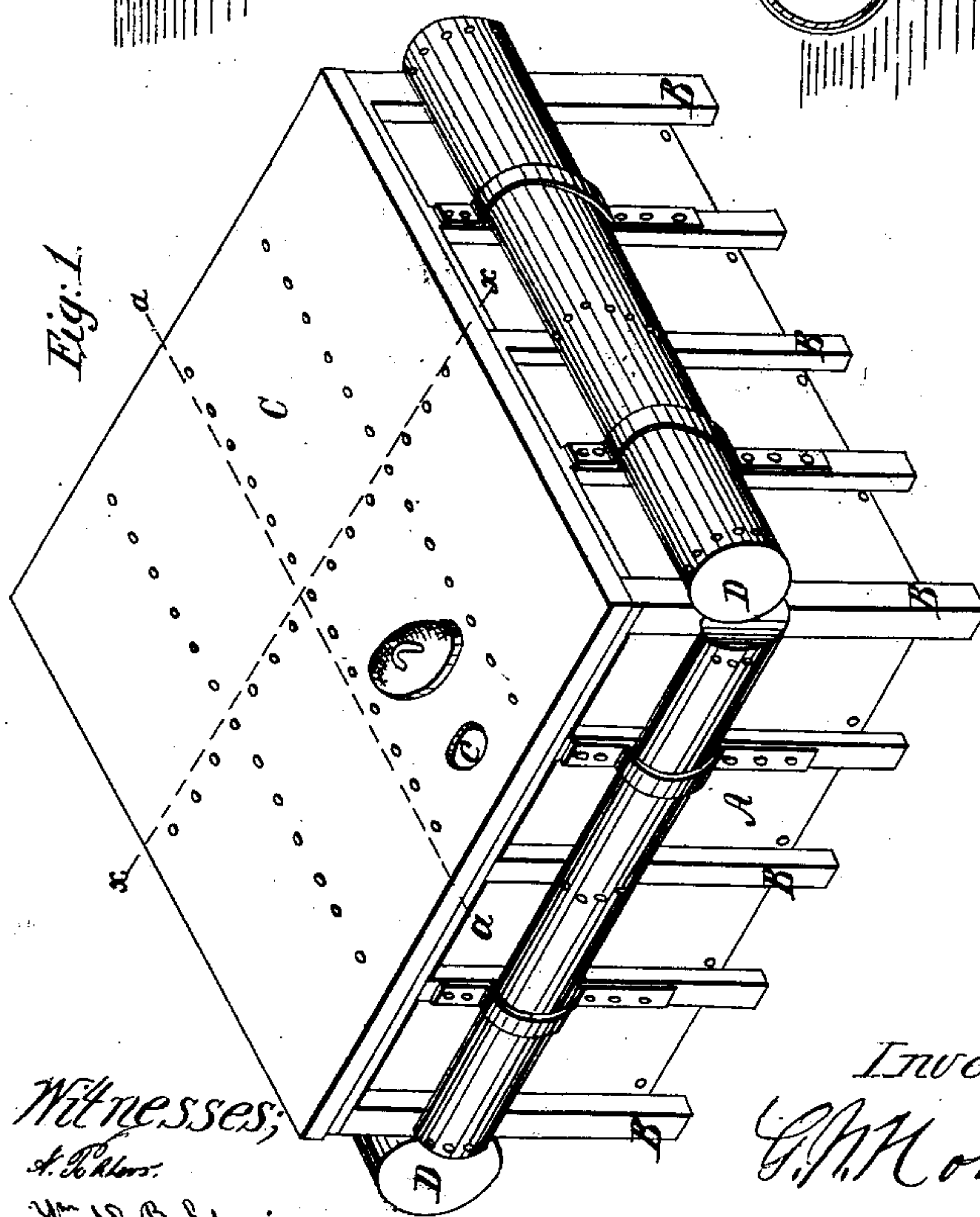
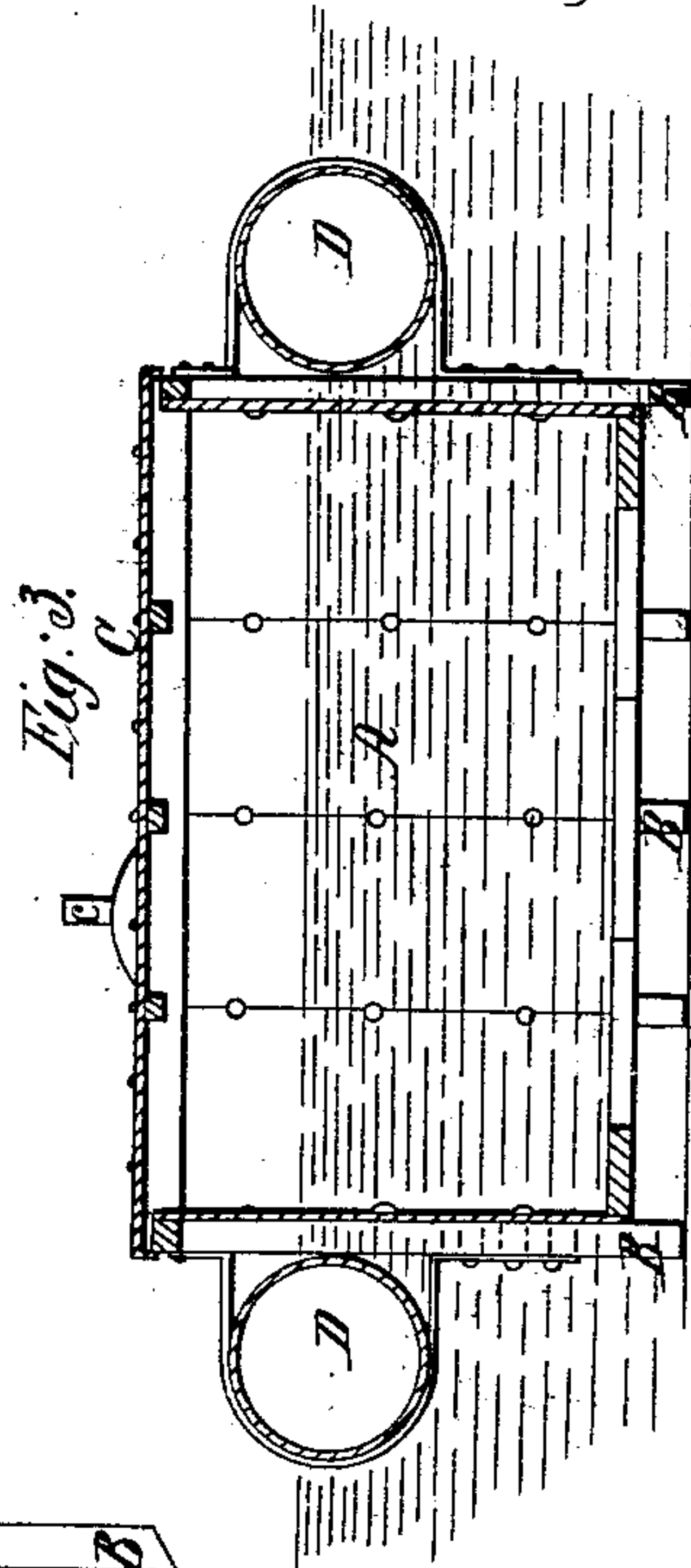
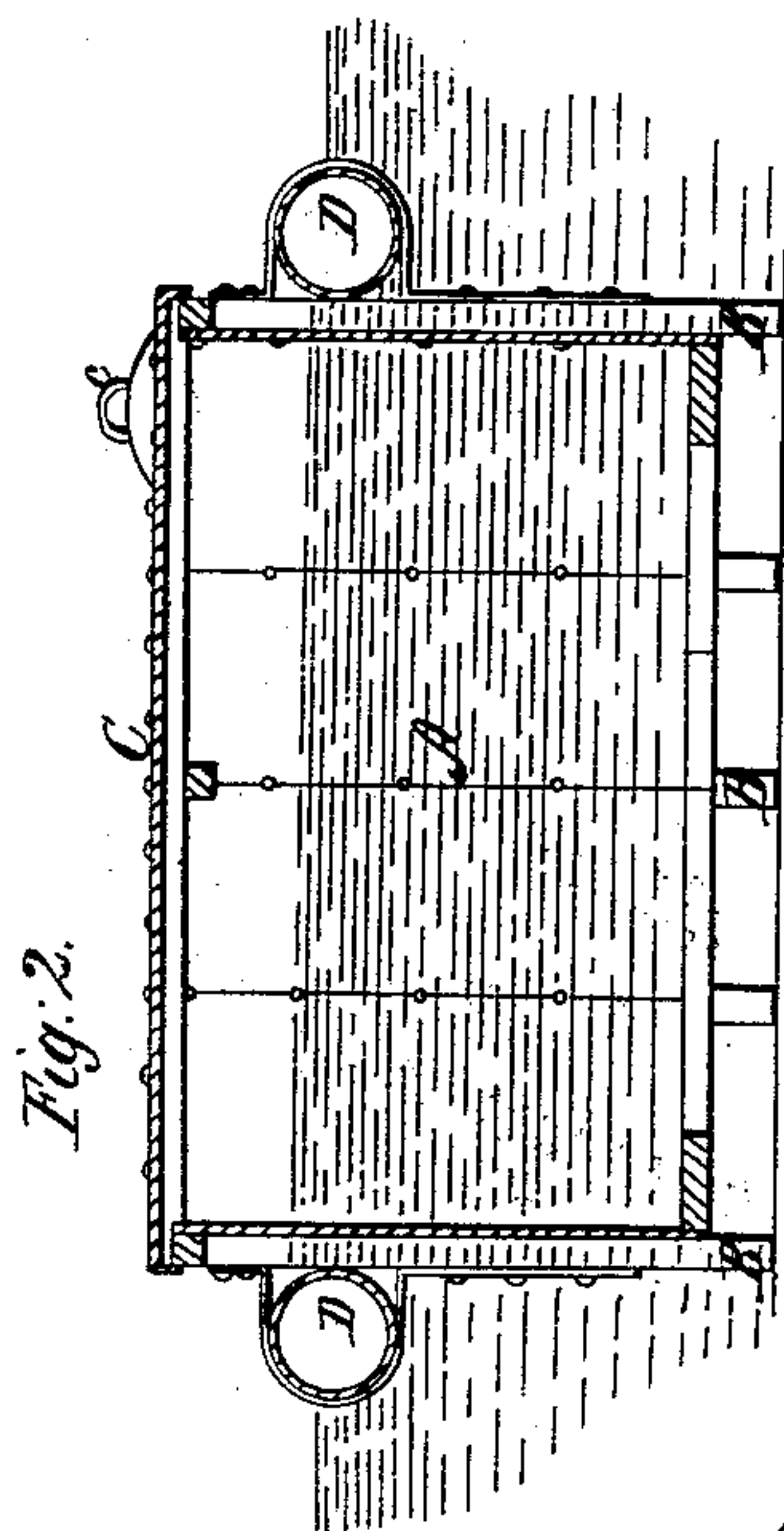


*G. W. Howard,*

*Oil Tank.*

*N<sup>o</sup> 34,426.*

*Patented Feb. 18, 1862.*



*Witnesses;*  
*A. B. Kline.*  
*Wm. D. Baldwin*

*Inventor;*  
*G. W. Howard*



# UNITED STATES PATENT OFFICE.

GEORGE W. HOWARD, OF PONTIAC, MICHIGAN.

## IMPROVEMENT IN OIL-TANKS.

Specification forming part of Letters Patent No. 34,426, dated February 18, 1862.

*To all whom it may concern:*

Be it known that I, GEORGE W. HOWARD, of Pontiac, in the county of Oakland and State of Michigan, have invented a certain new and useful Improvement in Oil-Tanks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, and in which—

Figure 1 represents a view in perspective of an apparatus for carrying out the object of my invention. Fig. 2 represents a vertical transverse section through the same at the line *o o* of Fig. 1, the blue lines indicating the immersion of the tank, while the yellow lines indicate the amount of displacement effected by the oil. Fig. 3 represents a vertical longitudinal section through the same at the line *x x* of Fig. 1, the blue lines indicating the depth of the immersion of the tank in the water.

My invention, although applicable to the storage of any of the oils, relates more especially to that known in commerce as "petroleum" or "rock oil," the production of which has so largely increased of late years; and my improvement consists in storing oils in a tank constructed with tight sides and an open bottom, said tank being provided with buoys or floats, as hereinafter more fully described, so that when placed in the water its upper edge will always remain above the surface and prevent the escape of oil, while the oil being of lighter specific gravity than the water will be prevented from escaping at the bottom, and the hydrostatic pressure being balanced will prevent strain upon the tank.

The advantages secured by my invention will be obvious at a glance to any one practically familiar with the nature and methods of obtaining rock-oil. This oil is generally procured by boring into the ground, and when a vein of it is struck, the oil (mingled with water) generally pours forth with a violence and rapidity which at times render it a matter of extreme difficulty to prevent its escape and loss. This oil is, moreover, of such a peculiarly subtle, volatile, penetrating nature that it is almost impossible to prevent its escape where it is allowed to exert its pressure upon the vessel. For instance, the loss by evaporation and leakage in transporting the oil from the wells in western Pennsylvania to

New York city ranges from twenty to forty per cent., notwithstanding the care taken in the construction of the oil-casks, and the loss when stored in quantities at the wells or refineries is even greater than this. By my plan this waste would be entirely prevented.

My invention also presents another great advantage in the security it gives against accidents from fire, which, owing to the inflammable nature of the oil, frequently occur.

The accompanying drawings represent a convenient arrangement for carrying out the object of my invention. The oil-tank A may be of any suitable size, form, or material. For large tanks I prefer to use sheet metal. In this instance the tank is represented as rectangular and formed of sheets of metal placed edge to edge and secured to strips B of wood. This tank has tight sides, but is open at the bottom. It may be provided with a removable cover, C, having an opening, *c*, in it for the admission of the oil and for the necessary escape of the gas which arises therefrom. This cover may be made air-tight (with the exception of the apertures *c* for the escape of gas;) or it may merely loosely cover the tank, at the option of the constructor, the operation being in no way affected by this difference of construction. The strips B project below the bottom of the tank and form legs or feet on which it may rest. These feet prevent the lower edge of the tank from settling on the bottom of the reservoirs, which would obstruct the passage of the water into and out of the tank. Floats D of sufficient buoyancy to sustain the upper edge of the tank the requisite distance above the surface of the water are secured to the sides of the tank. The tank may thus either rest upon the bottom of the reservoir or float upon the surface of the water (according to its depth) without disturbing its contents, and may even be transported from place to place, or be allowed to rise and fall with the tide. The tank may be placed in a vat, pond, lake, or even in a running or tidal stream with equal utility, and may be filled or emptied in any suitable way. As the oil enters the tank, owing to its lighter specific gravity it separates from the water with which it had become commingled in the well and floats upon the surface of the water and gradually displaces it, the water escaping at the bottom of the tank. In this manner



the tank may be filled until the oil is within an inch or two of the bottom, as shown by the yellow lines in Fig. 3. The outward pressure of the oil upon the inner sides of the tank being counteracted by the pressure of the water upon its outer sides it follows that the joints of the tank are always relieved from hydrostatic pressure, no matter whether it be full or empty, for as the oil flows in the water passes out, and vice versa. The size of the tank, therefore, can only be limited by the convenience or wants of the constructor, and it can be made at a cost which places such tanks within the reach of every producer. The difficulty thus overcome has heretofore well nigh driven producers of this oil to despair, for even tanks of riveted boiler-plates have failed to prevent waste.

In order to prevent the freezing of the water around the tank, I throw a little oil upon the surface of the reservoir, having found this to be an effectual preventive.

I am aware that a tank with an open bottom has been used by H. P. Gengembre, of Tarentum, Pennsylvania, and do not therefore broadly claim such device under this patent; but

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

Constructing an oil-tank with an open bottom, in combination with buoys or floats, substantially in the manner herein described, whereby the upper edge of the tank is always kept above the surface of the water and the tank may readily be floated from place to place or rise and fall with the tide, as herein described.

In testimony whereof I have hereunto subscribed my name.

G. W. HOWARD.

Witnesses:

WM. D. BALDWIN,  
D. ROWLAND.