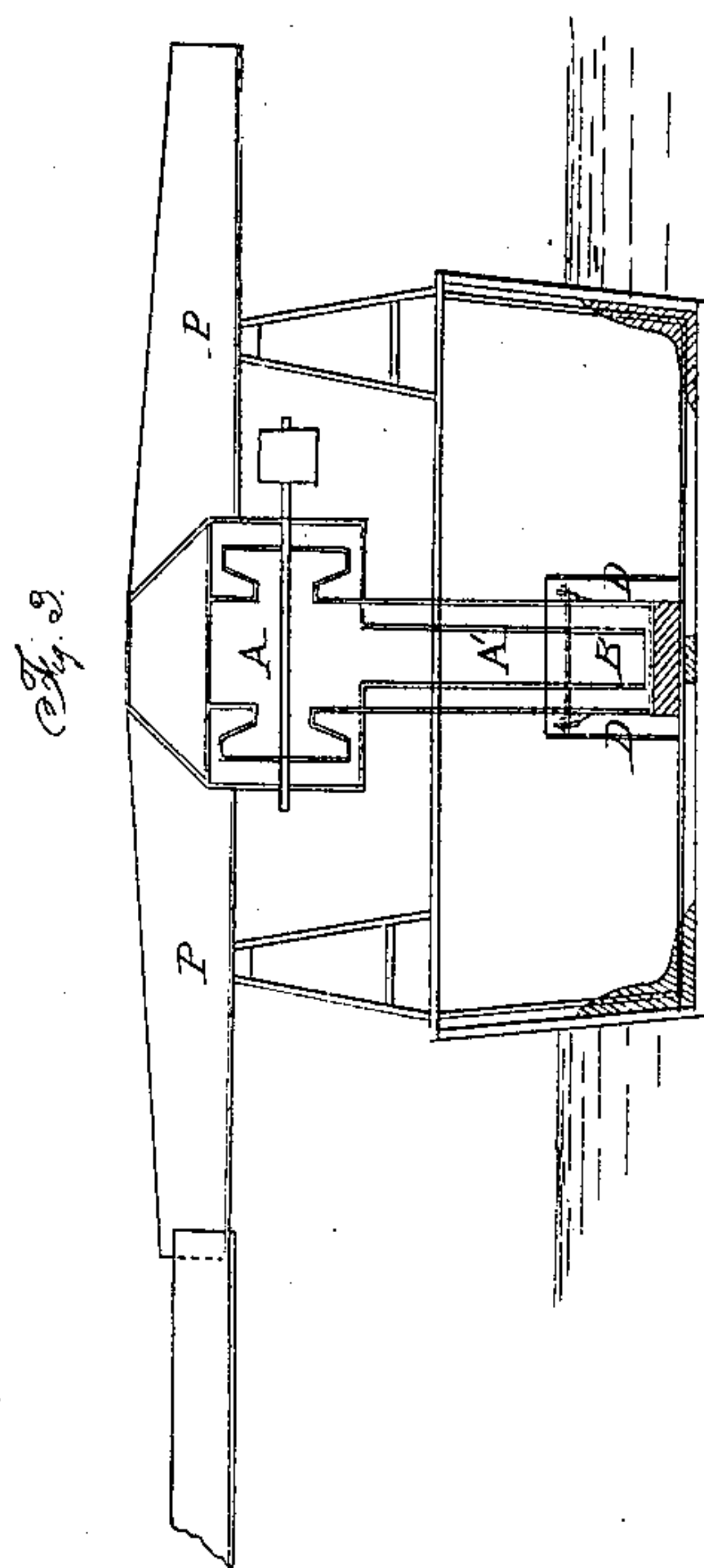
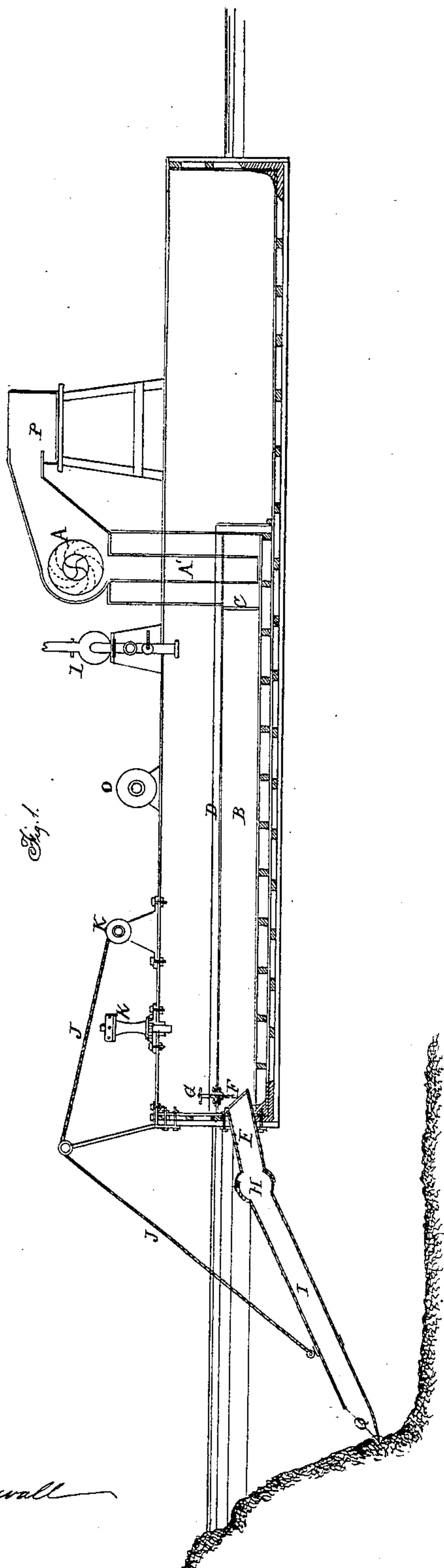


A. DUVALL.
MODE OF EXCAVATING UNDER WATER.

No. 75,004.

Patented Mar. 3, 1868.



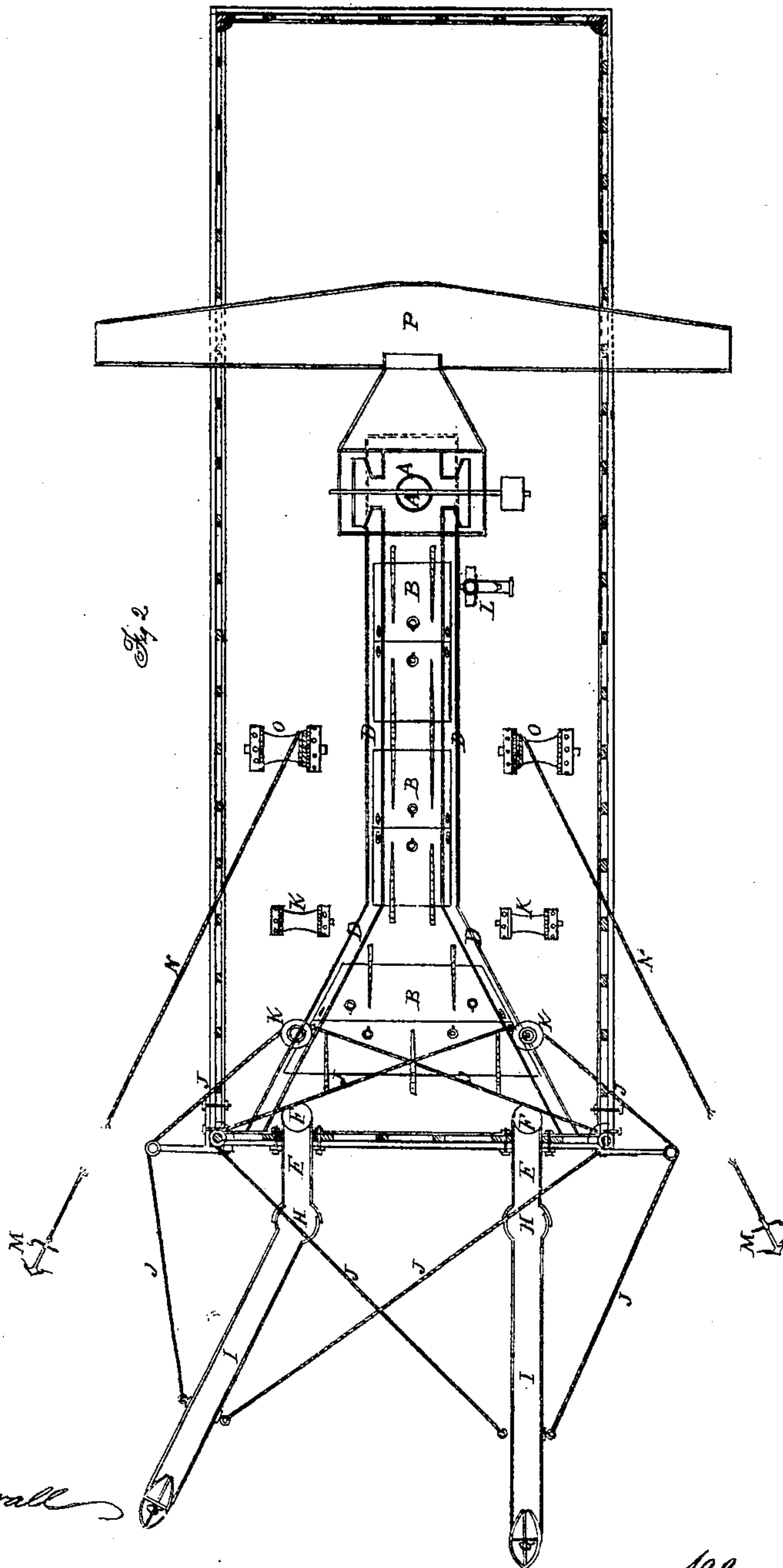
Witnesses
Leslie Duvall
H. J. Swaney

Alfred Duvall

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Witness
A. Duvall
E. D. Swaney

Alfred Duvall
Inventor

United States Patent Office.

ALFRED DUVALL, OF BALTIMORE, MARYLAND.

Letters Patent No. 75,004, dated March 3, 1868; antedated February 28, 1868.

IMPROVED MODE OF EXCAVATING UNDER WATER.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that I, ALFRED DUVALL, of Baltimore, in the county of Baltimore, and State of Maryland, have invented a new and useful Machine, adapted to the application of known principles, for the Purpose of Making Excavations Under Water, and removing the same; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and letters of reference thereon, making a part of this specification, in which—

Figure 1 is a longitudinal section in elevation.

Figure 2, a plan.

Figure 3, a cross-section.

To enable others skilled in mechanics to make and use my invention, I will proceed to describe the construction and operation of the same.

I use a boat, carrying a steam-engine or other motor, with a centrifugal or other pump. A is a centrifugal pump. A' is a short supply-pipe, extending into the receiving-box B. B is a receiving-box, with folding lids and two supply-pipes. C is a screen within the same. D is an outer box or water-chamber, rising above the receiving-box B, and intended to be filled with water to a line above the folding lids of the receiving-box, whereby the same is made perfectly air-tight. E E are short stationary supply-pipes, with valves at F. G are screws, by which the valves are secured, when desired. H H are universal joints, between the pipes E and I. I I are excavating supply-pipes, which are moved vertically or horizontally, as desired, by the ropes J and windlasses K. L is a small auxiliary pump, for charging the pump A, filling the water-chamber D, and pumping out the receiving-box B, when necessary. M and N are anchors and ropes, connecting with the windlasses O by which the boat is moved as desired in the operation of dredging. P is the trough, into which the pump A discharges on one or both sides of the boat, as desired, and which trough is connected with a series of troughs, as necessary, and as per circumstances; if discharging in water, to be supported on lighters, and if on land, on movable trucks. Q are screens, over the inlets of the pipes I.

Operation.

The pump A being charged, as also the water-chamber D, the screws G, fastening the valves F, are loosened, and the pump A set in motion, displacing the atmospheric pressure from the supply-pipes, when the pressure of the atmosphere on the inlets of the excavating-pipes forces into them earthy or other matter in connection with the water which is discharged into the trough P, and from thence into the series of troughs connected with the same, to be conducted off as per circumstances, less any particles too large to pass through the discharges of the pump A, and which are retained in the receiving-box B, by the interposition of the screen C. By means of the ropes J and windlasses K the excavating-pipes I are moved laterally and vertically, as desired, loosening earthy and other matter being excavated. When the receiving-box B becomes filled with coarse particles by the interposition of the screen C, the pump A is stopped, and the box B discharged of its contents, when, being charged again, it is ready for further operation, as described.

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

1. The combination of the pump A, receiving-box B, valve F, tubes E, and pipes I, the latter two being connected by a universal joint, H, substantially as set forth.
2. The combination and arrangement of the stationary tubes E, horizontally and vertically movable pipes I, cord J, and windlass K, substantially as set forth.
3. The combination and arrangement of the pipes I and E, receiving-box B, screen C, pump A, and trough or series of troughs P, substantially as and for the purpose set forth.
4. The receiving-box B, with the adjustable valve F and screen C, and external water-box D, constructed and arranged substantially as set forth.

ALFRED DUVALL.

Witnesses:

A. LESLIE DUVALL,
E. D. SWEENEY.