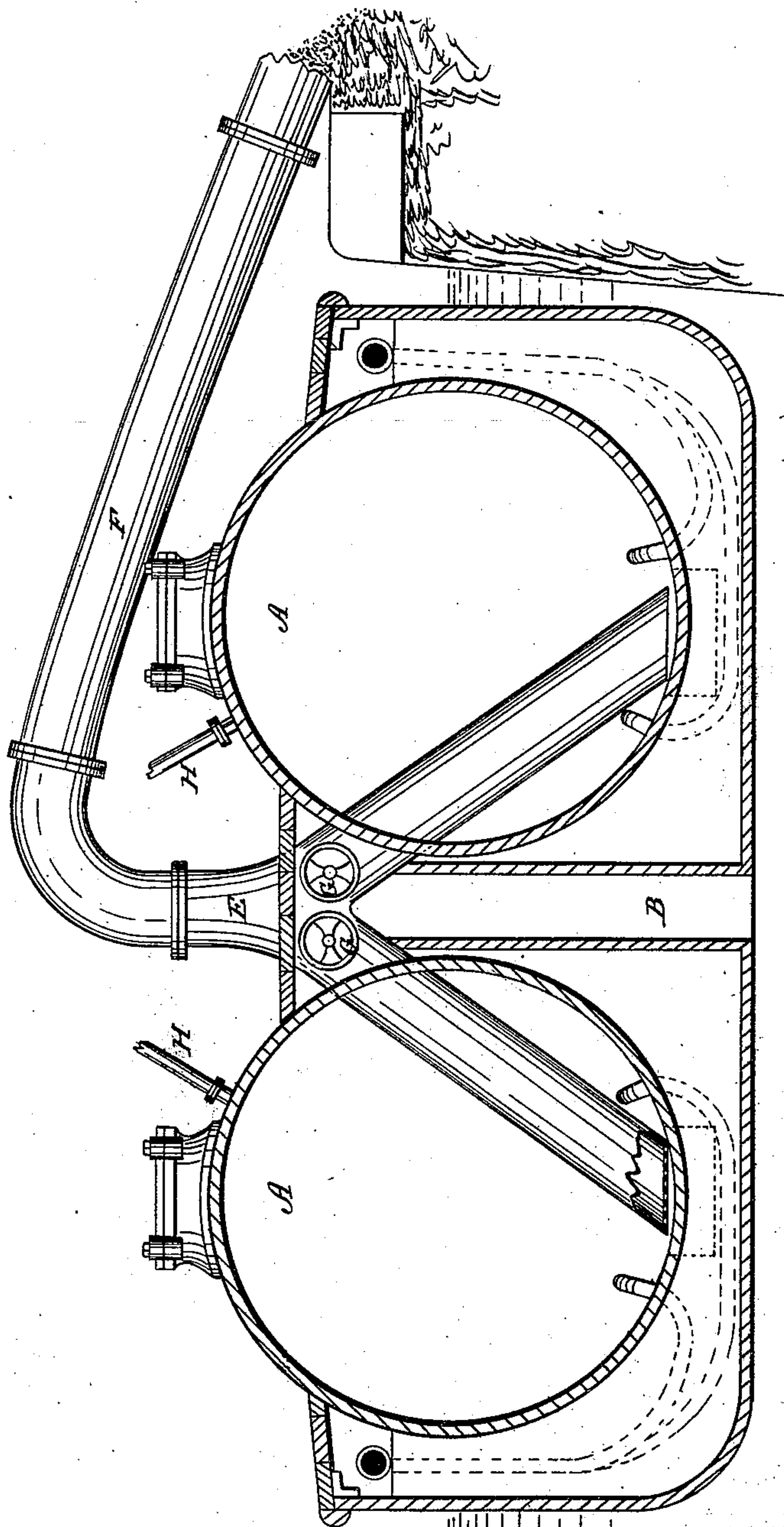


F. E. DUCKHAM.
DREDGING-MACHINE.

No. 186,994

Patented Feb. 6, 1877.



WITNESSES:

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UNITED STATES PATENT OFFICE.

FREDERIC E. DUCKHAM, OF MILLWALL DOCKS, ENGLAND.

IMPROVEMENT IN DREDGING-MACHINES.

Specification forming part of Letters Patent No. **186,994**, dated February 6, 1877; application filed August 11, 1876.

To all whom it may concern:

Be it known that I, FREDERIC E. DUCKHAM, of Millwall Docks, in the county of Middlesex, England, have invented a new and useful Improvement in Discharging Mud or "Spoil" from Dredgers and other Vessels; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to an improved method of discharging the mud and spoil raised by dredging from the bottoms of rivers, harbors, docks, canals, and other similar places; and consists in applying pneumatic pressure, as hereafter described.

According to my invention the mud or spoil is received from the dredging apparatus in a tank or tanks capable of being closed air-tight, and arranged in the hold of the dredgers itself, or they may be in a separate barge. When full, the receiving-apertures are closed and the tanks made air-tight, with the exception of an inlet or inlets for compressed air, and an outlet for the mud or spoil. Compressed air is then admitted to the tank, and the mud is expelled through pipes or hose on the shore, or elsewhere. To prevent the choking of the pipes a screen or grating is provided, through which the mud or spoil passes before it enters the outlet-pipe.

I prefer to construct the tanks of a form favoring the flow of the mud or spoil to the outlet; and in order to prevent a deposit of mud in the tanks so thick that it would not run freely to the outlet, and would therefore remain in the tank, I prefer to inject the compressed air with or without an admixture of water, supplied by force-pump or other means through a number of nozzles at the bottom of the tank, said nozzles being pointed toward the outlet.

By this means the particles are prevented from settling, and are kept in suspension until the whole is expelled from the tank. Compressed air may, moreover, be admitted into the discharge-pipe.

In order that my invention may be more readily understood, I have illustrated it in

the accompanying drawing, in which the figure represents a longitudinal section of a steam-dredger discharging the mud.

A A are the tanks to receive the mud, of which there are preferably two, one at either side of the central well B, in which the chain of buckets or scoops work. The mud raised by the latter is conveyed by chutes to the tanks, as usual. The tanks are preferably of the form shown, and are made of sufficient strength to sustain the pressure required to discharge the mud. When the tanks are full the vessel or barge containing them is moved to its place of discharge near the shore, or in other convenient position, and (the apertures beneath the chutes having been closed by proper covers) to the outlet-pipe E there is attached a discharge pipe or hose, F, by which the mud is conveyed to the shore and discharged. If the mud is contained in two tanks the two outlets may unite in a single outlet-pipe, F, as shown, in which case sluice-valves are provided in the branches at G, so that should one tank be emptied before the other, the outlet from said tank can be closed.

H is the pipe through which air is forced into the tank by an air-pump, I, worked by the same engines that drive the buckets and the screw-propeller.

The compressed air may be admitted at the upper part of the tanks to press upon the surface of the mud, as well, as before mentioned, through nozzles at the bottom of the tank, and I may employ a reservoir for compressed air on board or on shore, and admit the air therefrom into the tanks or pipes in any manner to facilitate the discharge.

To keep the mud agitated and prevent any thick deposit in the tank, in addition to the air and water inlets, I may provide mechanical agitators or scrapers in the tank for the same purpose.

The invention may also be similarly employed for discharging mud from tanks not fitted in the dredger itself, but in a separate barge—a suitable air-pump, operated by steam or other power, being provided on board or

on shore, or a connection made with the tanks in the barge and the air-pump on board another barge or vessel.

Having thus described my invention, what I claim as new is—

The combination, with air-tight tanks A and well B, of outlet-pipe E, hose F, and pipes H, connected with air-pump, substantially as and for the purpose specified.

The above specification of my invention signed by me the 6th day of April, 1876.

FREDERIC ELIOT DUCKHAM.

Witnesses:

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