G. W. CRANSTON.
Sand or Earth Elevator.

No. 201,753. Patented March 26, 1878.

Fig. 1

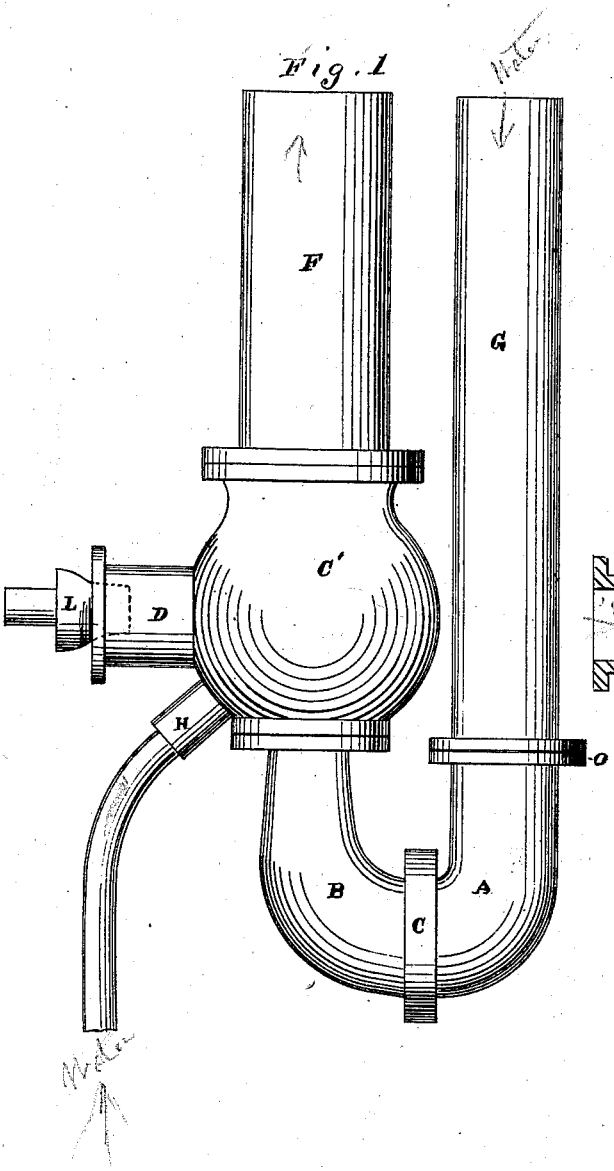
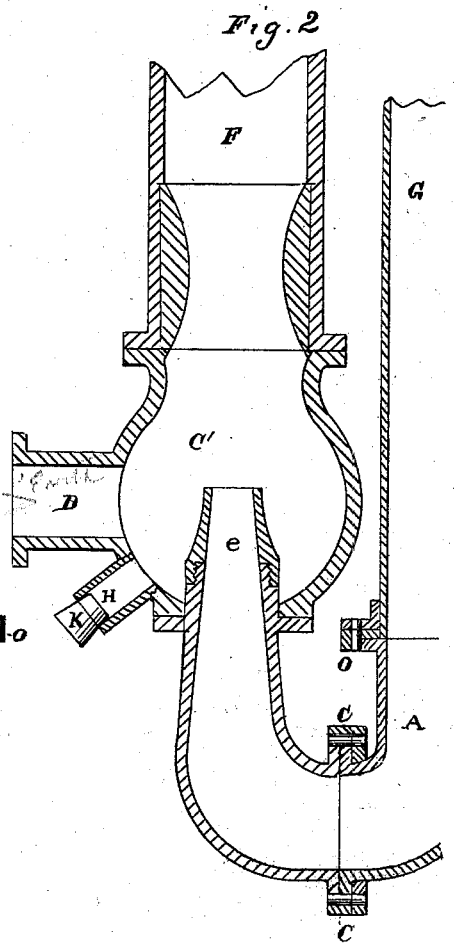


Fig. 2



Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE W. CRANSTON, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN SAND OR EARTH ELEVATORS.

Specification forming part of Letters Patent No. **201,753**, dated March 26, 1878; application filed March 7, 1878.

To all whom it may concern:

Be it known that I, GEORGE W. CRANSTON, of the city and county of San Francisco, and State of California, have invented an Improved Water-Elevator; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings.

My invention relates to an improved machine for raising water and earthy material out of excavations; and the invention consists in the combination of parts, as will be hereinafter described.

Referring to the accompanying drawings, Figure 1 is a side view; Fig. 2, a sectional view.

Let A B represent two short curved pipes or tubes, which are connected together by a vertical joint, C, so that when both sections stand in the same direction they represent a U-shaped pipe. The extremity of the bent pipe B is formed into a nozzle, *e*, which projects upward into a globular section, C′, so as to terminate nearly opposite the center of a side opening, D, in the globular section. The upper opening of the globular section is contracted somewhat, and the end of the nozzle *e* points directly through it. A straight pipe, F, is secured upon the globular section, and may extend upward to any desired height. A straight pipe, G, which is smaller in diameter than the pipe F, is secured by a loose horizontal joint, O, upon the upper end of the bent pipe A, and this pipe extends upward to the reservoir or source of supply, which furnishes the head of water for operating the machine.

A small tube, H, which extends downward to any required distance below the machine, communicates with the interior of the globular section C′ below the main opening D, for the purpose hereinafter specified.

I thus provide a hydraulic pipe, G, with U-shaped lower end, the extremity of which is a nozzle, which delivers a stream of water under pressure into the globular section, and directs it up through the straight pipe F.

The vertical joint C, which connects the two bent sections A B, permits the two branches of the machine to be shifted to any desired angle to each other sidewise, while the horizontal joint O permits the parts B, C′, and F to be revolved about the pipe G as a center.

In use the machine is lowered into the excavation from which it is desired to raise earthy material or water, with the bent sections A B at the bottom. The pipe G extends upward to the source of supply, so that a stream of water will pass down through it, and be delivered by the upwardly-turned nozzle *e* into the pipe F.

The globular section C′ serves as a receiving-chamber, into which the earthy material is delivered through the side opening D, so that it will be caught by the upward-moving stream of water, and lifted by it up through the pipe F, and delivered at the surface of the ground outside of the excavation.

The downward-projecting pipe H extends down to the bottom of the excavation, or into a swamp, and serves as a suction-pipe for raising the water which accumulates at the bottom up into the globe upon the ejector principle.

A plug, K, serves to stop the end of this pipe when its use is not required for the purpose specified; or, if it is desired to raise water through this pipe only, the opening D can be stopped by a plug, L.

By means of this machine I can raise earthy material and water to a great height, and sink shafts and other vertical excavations with great facility. It also serves as a ventilator by withdrawing foul air from the bottom of the excavation or shaft, as the upward draft and suction produced by the upward-moving current or stream of water will draw in air at the opening B with the earthy material, and carry it out through the pipe F.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The pipes A and B, connected by a flexible vertical joint, C, in combination with upright pipe G, connected thereto by a rotative joint, globular section C′, with its opening D, and discharge-pipe F, substantially as and for the purpose described.

In witness whereof I have hereunto set my hand and seal.

GEORGE W. CRANSTON. [L. S.]

Witnesses:
GEO. H. STRONG,
FRANK A. BROOKS.