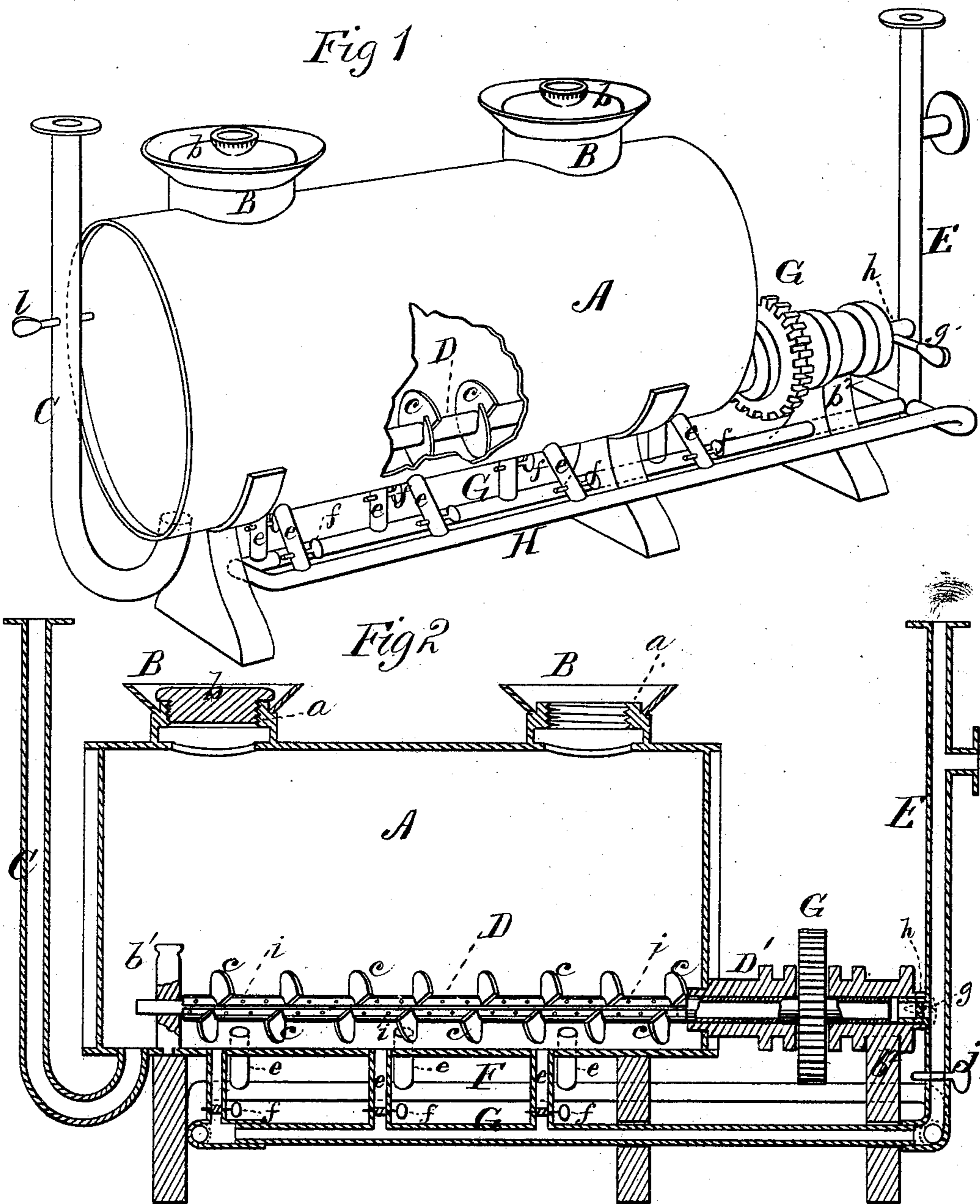


F. C. PRINDLE.
DREDGING-APPARATUS.

No. 179,055.

Patented June 20, 1876.



WITNESSES
Villette Anderson
A. J. Masi

INVENTOR
Franklin C. Prindle,
by E. W. Anderson,
ATTORNEY

UNITED STATES PATENT OFFICE.

FRANKLIN C. PRINDLE, OF PHILADELPHIA, ASSIGNOR OF ONE-HALF HIS
RIGHT TO FRANKLIN B. COLTON, OF DARBY, PENNSYLVANIA.

IMPROVEMENT IN DREDGING APPARATUS.

Specification forming part of Letters Patent No. **179,055**, dated June 20, 1876; application filed
May 11, 1876.

To all whom it may concern:

Be it known that I, FRANKLIN C. PRINDLE, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and valuable Improvement in Dredging Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a perspective view of my apparatus; and Fig. 2 is a longitudinal vertical section of the same.

This invention has relation to improvements in that class of apparatus which is used in connection with dredging machinery for disposing of the materials taken from the beds of rivers, canals, and harbors, and for utilizing the same for filling in and developing low lands; and the nature of the invention consists in a strong air-tight receiver having hoppers, closed by suitable plates, through which the dredged material is deposited in the receiver from the dredge dipper or scoop, which vessel is provided at one end with an eduction-pipe, and at the other end with a pipe for the admission of air and water, which, when forced into the receiver by a suitable pump, will carry the semi-liquid mass out of the eduction-pipe through suitable connections to the place of deposit. It also consists in combining with the receiver a rotating shaft provided with agitating-blades, whereby the clods of material will be broken up and fed toward the eduction end of the said receiver, thereby greatly facilitating and accelerating the discharge of the material from the educt-pipe. It also consists in making this shaft hollow, and in providing it with perforations in front of the blades; also in connecting the end of the shaft projecting from the receiver with the water and air induct, whereby the movement of the dredged material toward the educt will be greatly facilitated, and its reduction to a semi-fluid condition accelerated, as will be hereinafter more fully explained.

In the annexed drawing, the letter A designates a strong, preferably cylindrical, metallic

vessel or receiver, having upon its upper surface man-holes provided with hoppers B. These hoppers are provided with an inner screw-threaded collar, *a*, into which are screwed closing-plates *b* when a sufficient charge has been deposited in the said receiver through the hopper, which plates form an air-tight joint with the said collar. This receiver may be placed upon a scow secured alongside the dredge while being filled, or upon a wharf or dock within reach of the dredge-scoop where the material is to be twice handled; and it is provided at one end with a large eduction-pipe, C, which is bent in the shape of the letter U, and enters the receiver from below, so that the natural gravitation of the dredged material will carry it into the bend. D represents a hollow metallic shaft, having its bearings in a standard, *b*¹, near the eduction-aperture of the receiver at one end, and extending through a stuffing-box, D', at the opposite end of the receiver in a second standard, *b*², outside of the same. The part of the shaft inclosed between the end walls of the receiver is provided with a number of spaced blades, *c*, which are in the nature of screw-threads, and will, when the shaft is rotated, carry the dredged material to the educt; also, with a number of perforations, *i*, the object of which will hereinafter appear. Shaft D extends through its bearing in upright *b*², and connects with an induct-pipe, E, designed to admit the air and water into the receiver. This pipe is connected to a pumping and blowing engine in the customary manner; and the operation of my apparatus is then as follows: A sufficient charge having been introduced into the receiver the hoppers are then hermetically sealed by plates *b*, and air and water introduced into the receiver through pipe E under sufficient pressure to expel the material through eduction-pipe C, and suitable conveyer-pipes connected thereto, and to carry it to the place of deposit. The air and water enter into the receiver through perforations *i* in the hollow shaft D, also through supplementary pipes F G H connected to the air and water induction-pipe E, and communicating with the receiver by short pipes *e*, which are provided with cocks *f* for the purpose of regulating the sup-

ply. These pipes F G H are arranged under and at each side of the receiver, and being provided with numerous discharge-pipes *e* the water and air will be evenly and regularly distributed over the entire lower part of the receiver. During the delivery of air and water to the receiver motion will be imparted to the shaft D, through the medium of a gear-wheel, G, meshing with other gears or systems of gears operated by a suitable motor; or I may substitute in lieu of the gear a pulley and an endless belt. The rotation of the shaft and screw-blades will break up the mass in the receiver, and by mixing it with the water rapidly reduce it to a semi-fluid condition, when it will readily enter the educt-pipe C. It will also carry or feed the material from the induction to the eduction end of the receiver, thus greatly facilitating its discharge therefrom.

Air and water may be cut off from the hollow shaft D by means of a cock, *g*, applied to the branch *h* of the induct-pipe E, communicating with the said shaft, and from the lower system of distributing-pipes F G H by means of a similar cock, *j*, applied in induct-pipe E above its union therewith. I am thus enabled to regulate the supply of water according to the more or less wet condition of the dredged material.

In order to accumulate the force or pressure in the receiver, educt C will have a cock, *l*, which being closed will have the desired effect.

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

1. In combination with the receiver A, having an eduction-pipe, C, and an air and water induction-pipe, E, the rotating shaft D, having feeding and agitating blades *c*, substantially as specified.

2. The hollow shaft D, having perforations *i* and agitating-blades *c*, in combination with the receiver A, having an educt, C, and a water and air induction pipe, E, connected to the said shaft, substantially as specified.

3. A receiver for dredged material, having hoppers for the admission of the same, and provided with detachable closing-plates forming an air-tight joint therewith, substantially as specified.

4. In combination with the mud-receiver A, having educt C and air and water induct E, the pipes F G H connected with the induct and communicating with the receiver by spaced distributing-pipes *e*, substantially as specified.

5. The process herein described of conveying dredged material to a place of deposit, consisting of placing the said material in an air-tight vessel or receiver, agitating and reducing it to a semi-fluid condition, and forcing it out of the vessel by hydro pneumatic pressure, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

FRANKLIN C. PRINDLE.

Witnesses:

ALLEN H. GANGEWER,
CHAS. F. VAN HORN.