G. W. CUMMINGS.
Dredging-Machine.

No. 209,159. Patented Oct. 22, 1878.

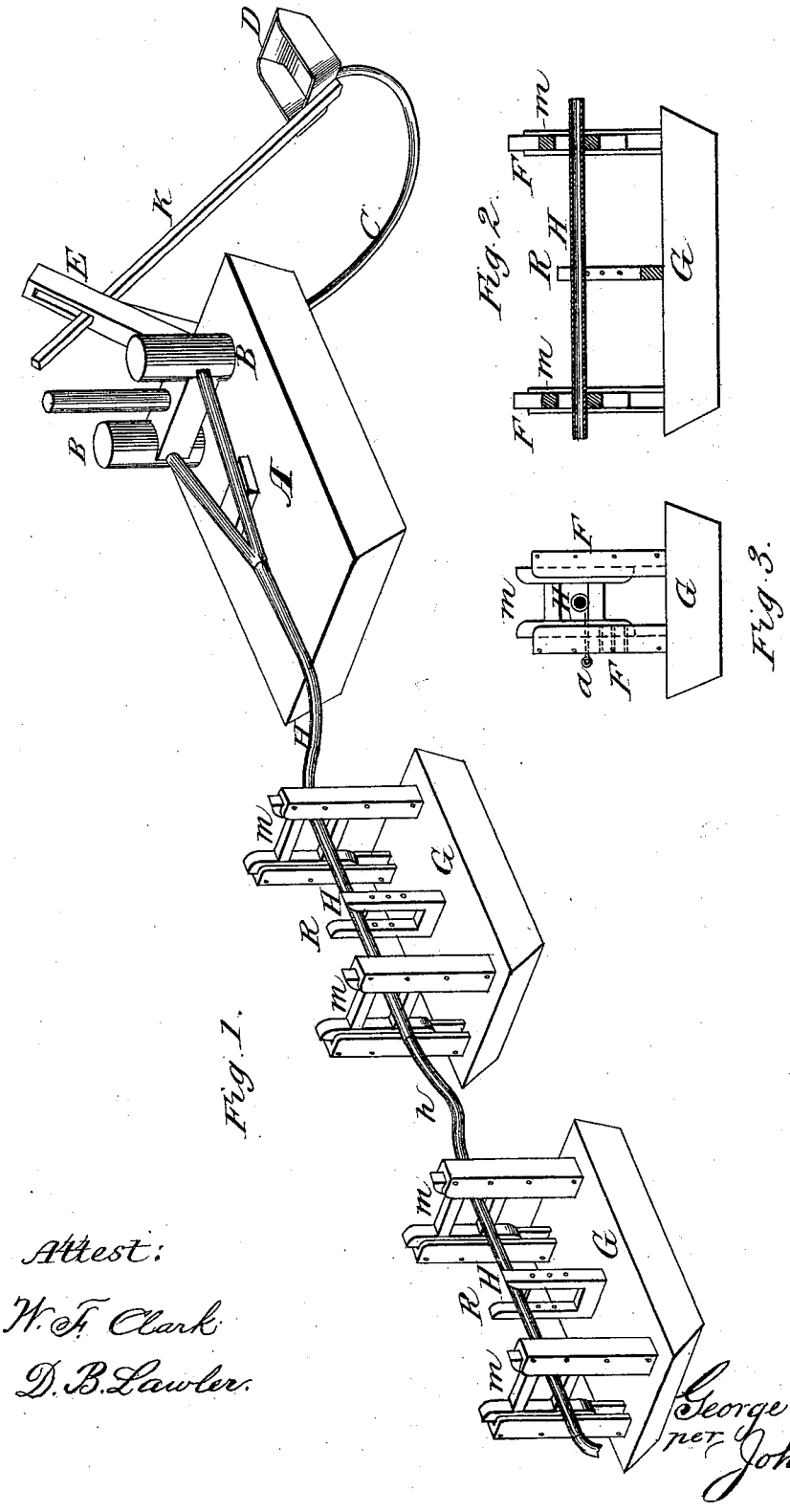

Fig. 1.

Fig. 2.

Fig. 3.

Attest:
W. F. Clark
D. B. Lawler.

Inventor.
George W Cummings
per John L Boone
Attorney

UNITED STATES PATENT OFFICE.

GEORGE W. CUMMINGS, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN DREDGING-MACHINES.

Specification forming part of Letters Patent No. **209,159**, dated October 22, 1878; application filed June 20, 1878.

To all whom it may concern:

Be it known that I, GEORGE W. CUMMINGS, of the city and county of San Francisco, in the State of California, have invented an Improved Dredging-Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification.

My invention has reference to that class of dredging-machines in which the material to be dredged is raised through a pipe either by means of a vacuum or by means of hydraulic pressure.

My invention consists in combining a scoop or digging and hoisting device and suction-dredge in one machine, the scoop or digger being applied to cut or dig and pick up the material to be dredged, while the suction-dredge takes the material from the scoop and raises it into tanks on the dredge-vessel, or forces it, after it is raised above the dredge-vessel, through a pipe or pipes to the place of deposit.

My combination can be applied to all kinds of suction-dredges; but for the purpose of this application I have represented it in combination with a dredge in which the suction is produced by one or more steam vacuum-pumps.

Figure 1 is a perspective view of my invention. Fig. 2 is a side elevation of one of the lighters, partly in section. Fig. 3 is an end elevation of the same.

Let A represent a dredge-boat, having the two steam vacuum-pumps or cylinders B B located upon it. C is the flexible suction-pipe, which extends from the vacuum-pumps to the bottom of the river, lake, or bay, and through which the dredged material is raised. D is a scoop or dipper, which is attached to the lower end of a lever, handle, or beam, *k*, the upper end of which passes through an elongated opening in a beam, E, mounted at the forward end of the dredge-boat, so that the dipper or scoop can be worked upward against a bank, for the purpose of digging and scooping up the material to be dredged; or it may be worked laterally from side to side, after the manner of an ordinary digging-dredge. Instead of constructing this dipper or scoop with a hinged or swing bottom, as heretofore, I make it with a solid bottom, and connect the outer end of the flexible suction-pipe C with it, as shown, so that when the material is received into the scoop it will be drawn or forced through the suction-pipe by the vacuum or hydraulic pressure.

It will be noticed that I simply use the scoop or dipper for digging and scooping up the material to be dredged and delivering it to the receiving end of the suction-pipe C, thus providing a positive means for feeding the material to the suction-pipe and remedying one of the defects of the suction-dredge.

Any other suitable digging device may be used in place of the scoop D. For instance, the device known as the "clam-shell" can be used for delivering the material to the suction-pipe.

I construct the discharge-pipes, through which the dredged material is conducted to the dumping-ground, in the following manner: Across each lighter G, I place a wooden or other rigid pipe or tube section, H, which is mounted upon adjustable bearings or supports, as hereinafter described. I then connect these rigid pipe-sections together by means of flexible sections *h h*, so as to form a continuous conduit or discharge-pipe. Each rigid section I support upon three bearings, *m m* R. The middle bearing, R, of each section serves as a central support for the section, and it may be adjustable as to height or not, as preferred. The end bearings or supports, *m m*, are both made adjustable within the frame or standards F, and held at the desired height by a pin or pins, *a*, passing through said frame or standards and into one of a series of holes in the outer edge of the bearings *m*, so that they may be raised vertically, in order to vary their height. The central support will then be a pivot-bearing, so that the angle or inclination of each section can be adjusted as desired by elevating or depressing its end bearings or supports.

The scoop and flexible conducting-pipe can also be used in connection with that class of dredges in which the dredged material is carried upward through a pipe by a pump or otherwise, the scoop being located in connection with the pipe by a flexible tube or hose, so that the suction produced by the forced

current will draw the material from the scoop into the stream of water in the pipe and conduct it away. This arrangement is quite simple and effective. It combines the most effective features of the two classes of dredges—that is, it is a digging-dredge and a suction-dredge combined, the parts being so arranged as to render the operation positive.

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

1. In a dredging-machine, a flexible suction-pipe provided with a scoop or digger and a rigid handle for operating the same, substantially as and for the purpose set forth.

2. A floating conduit or discharge-pipe of a dredging-machine, in combination with one or more lighters or floats provided with vertically-adjustable bearings, substantially as and for the purpose set forth.

3. The combination, with a flexible suction-pipe having attached thereto a scoop or digger, of a lever-handle connected to said scoop or digger, and passing up through an elongated opening in a beam or other fixture secured to the dredge-boat, substantially as and for the purpose described.

4. A floating conduit or discharge-pipe for dredging-machines, consisting of the rigid sections H, mounted upon adjustable bearings R *m m* on the lighters G, and connected by flexible sections *h h*, substantially as and for the purpose set forth.

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

GEORGE W. CUMMINGS. [L. S.]

Witnesses:
D. B. LAWLER,
W. F. CLARK.