

No. 644,521.

Patented Feb. 27, 1900.

D. JORDAN.

ROTARY DREDGING AND EXCAVATING MACHINE.

(Application filed June 9, 1899.)

(No Model.)

Fig. 1.

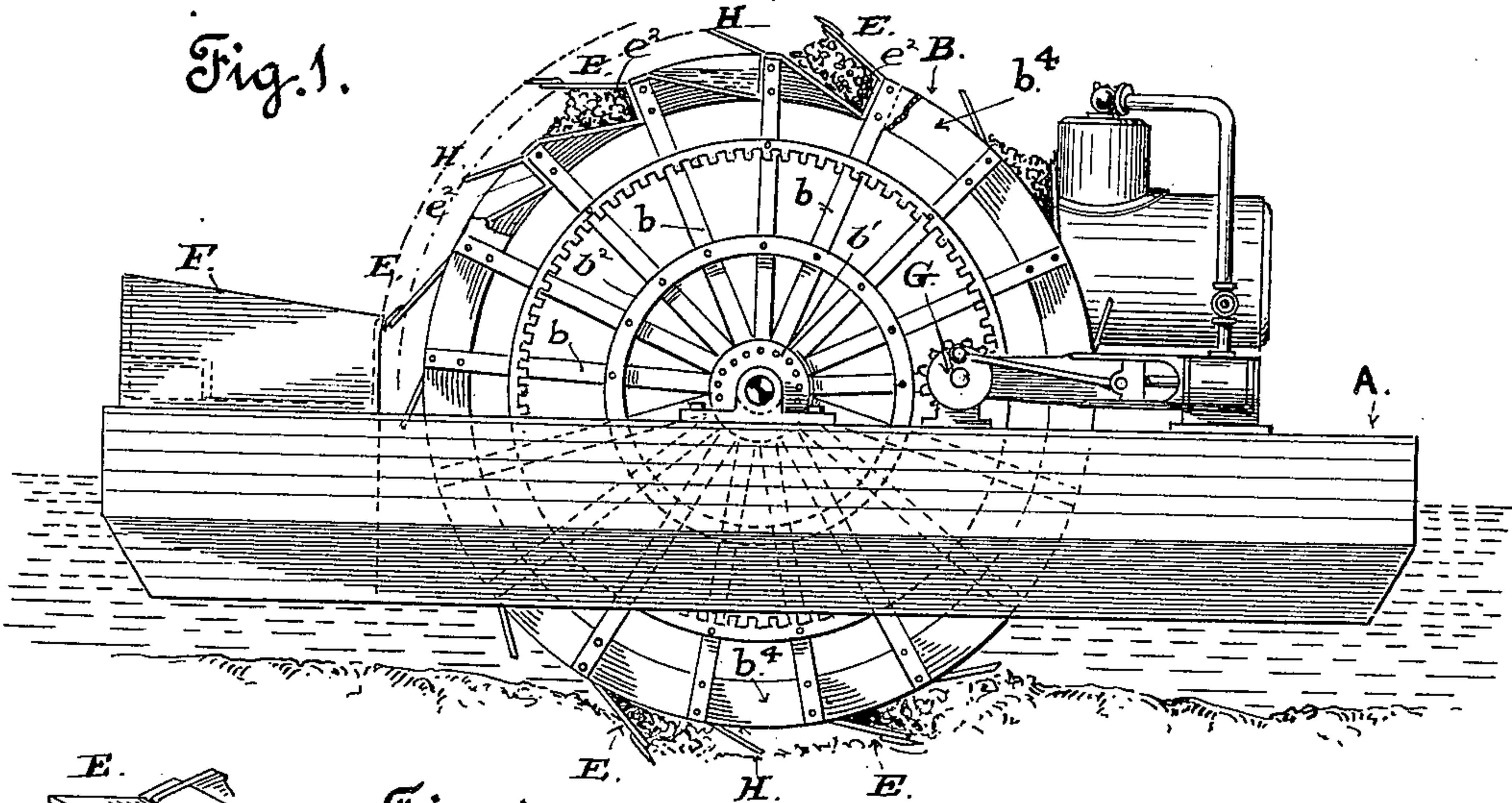


Fig. 4.

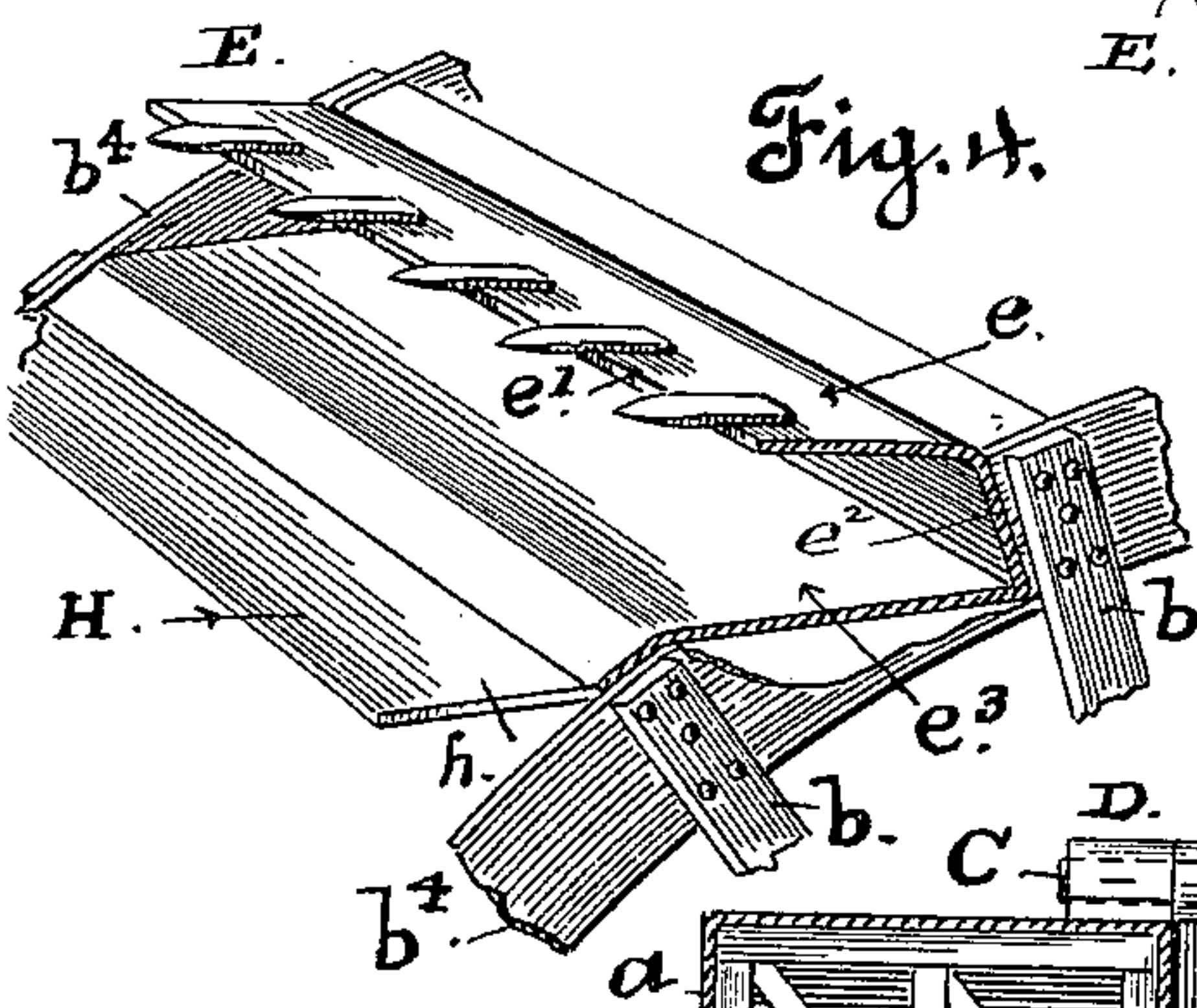


Fig. 2.

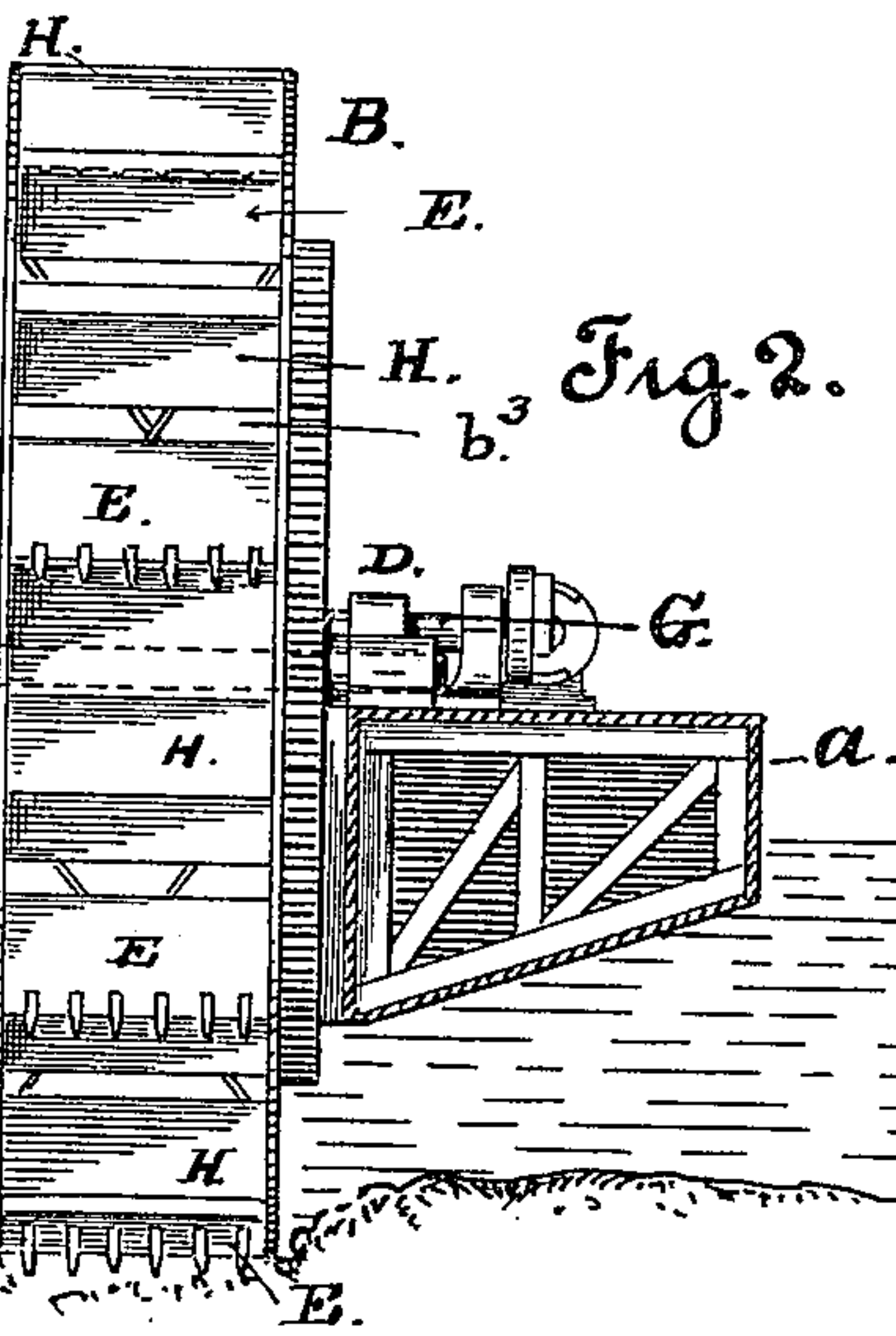
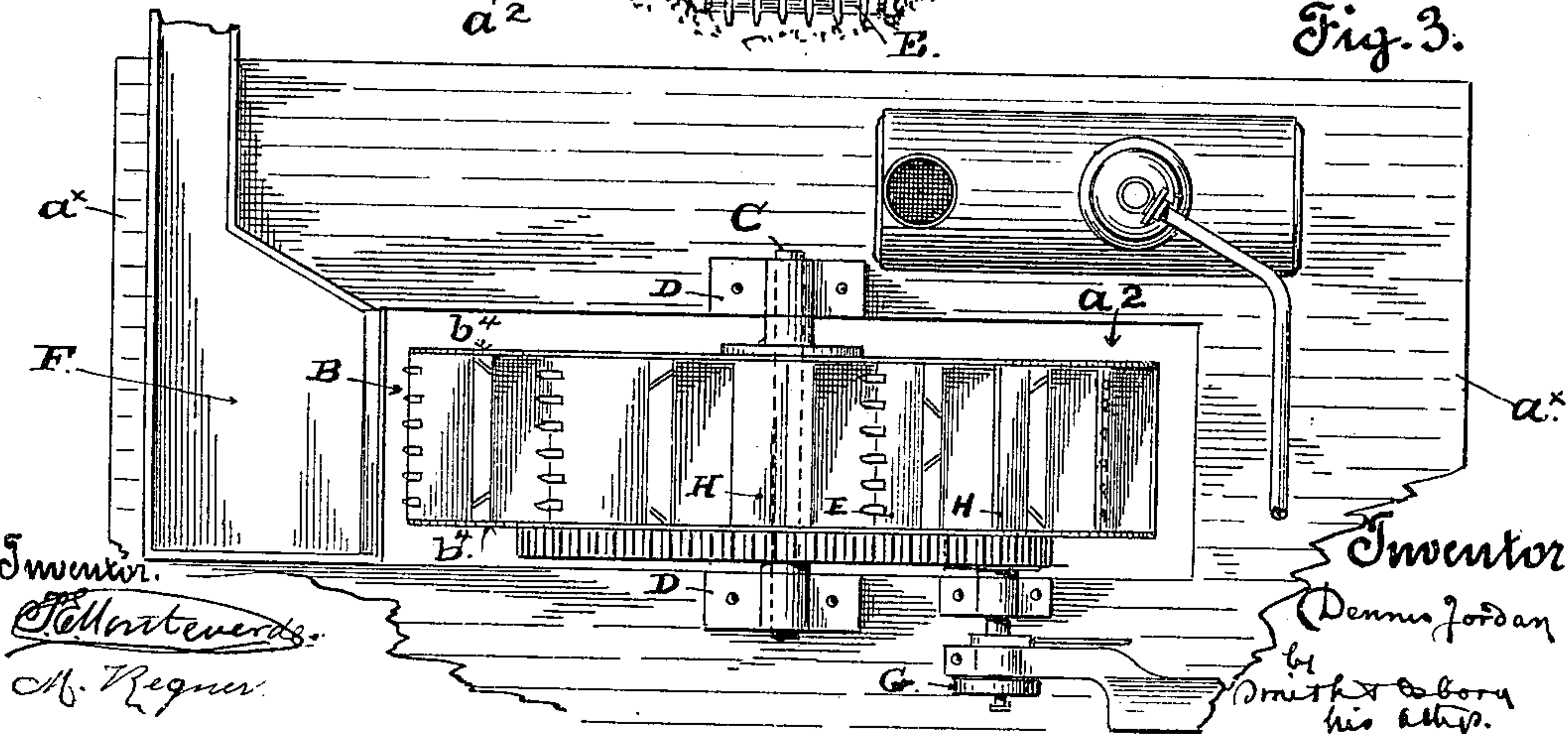


Fig. 3.



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UNITED STATES PATENT OFFICE.

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ROTARY DREDGING AND EXCAVATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 644,521, dated February 27, 1900.

Application filed June 9, 1899. Serial No. 719,961. (No model.)

To all whom it may concern:

Be it known that I, DENNIS JORDAN, a citizen of the United States of America, residing in the city and county of San Francisco, in the State of California, have invented new and useful Improvements in Rotary Dredging and Excavating Machines, of which the following is a specification.

This invention relates to improvements made in dredging and excavating machines of that class or description known as "wheel-dredgers," in which cutting and excavating devices arranged on the circumference of a skeleton wheel are caused to cut into and raise the dredged material by the rotation of the wheel on its axle.

The present invention comprising improvements in this class of dredging-machines includes a certain novel construction and combination of dredger-scow, rotatable dredger-wheel, and excavating and elevating devices, as hereinafter more fully described, and pointed out in the claims at the end of this specification, reference being had therein to the accompanying drawings, forming part thereof.

Figure 1 of the drawings is a side elevation of a dredging-machine embodying my said improvements. Fig. 2 is a vertical transverse section through the scow. Fig. 3 is a top view, and Fig. 4 is a detail, in perspective, of a section of the rim of the wheel, showing one of the excavating and elevating devices.

A indicates a scow constructed of two separate parts or sections a a and end portions a^x a^x , uniting the sections at the bow and stern, so as to produce a stiff and buoyant structure with a well or opening a^2 in the center.

B is a circular framework or skeleton wheel, and C the shaft or axis on which it is hung in the well on shaft-boxes D D.

E E are cutting and excavating devices on the periphery of the wheel, and F is a hopper on the scow to receive the contents of the receptacles from the discharge side of the wheel.

Power is applied to turn the wheel through the medium of an engine-shaft G, geared into the wheel, the gearing being suitably proportioned to obtain the necessary power.

A novel part or feature in the construction

of the wheel consists in making some of the shovels or blades somewhat shorter than the others to lie within the circle described by the projecting edges of the latter, so that the shorter ones, H, take up and carry water or thin material while the larger ones cut into and raise the more solid material.

The wheel represented in the drawings has the water-carriers alternating with the excavators; but that arrangement may be changed to secure greater or less proportion of fluid matter to the solid matter being raised, according to the special conditions under which the apparatus may be required to work, the proportion of the fluid to the solid material being regulated to secure the clean discharge of the dredged material from the excavators into the hopper and from that receptacle through the sluice or conductor I to the place of deposit.

The construction of the excavators and water-carriers will be understood from the detail view, Fig. 4. The excavator has a flat bottom e , terminating in a straight cutting edge e' , standing out from and across the rim of the wheel, and from the back e^2 a slanting apron e^3 , fixed at a forwardly-extending angle in the direction of the rotary motion, extends from the back of the excavator beneath the bottom e outwardly to the corresponding bottom of the next adjacent cutter or receptacle in front. In the present arrangement of the same this slanting apron extends from the back of one excavator outwardly to the bottom of the water-carrier next in front of it, to which it is joined. In the same manner the slanting apron beneath or inside the water-carrier bottom h is joined to the back edge of the excavator E next in front, so that the bottom or outer surface of that part is a continuation of the apron outward beyond the rim of the wheel, over which the dredged solid material and the fluid are discharged at the proper angle to be caught by the trough on the scow. The wheel is constructed of two skeleton heads each composed of a number of spokes b b , fixed in a common hub b' and united by broad rings or circular flanges b^2 and diagonal bracing b^3 within the circle of the excavating and elevating receptacle. Broad flanges b^4 at the circumference of the wheel form the sides of these receptacles, and

between these flanges the bottom plates *e h*, that project beyond the rim, and the slanting aprons, that join one bottom to the other, are fastened by bolts, provision being made for
5 removing any one of the parts and substituting new parts in case of injury. These features of construction enlarge the scope of the machine to such a degree that it can be used to advantage to operate on material of different grades of stiffness, hardness, and consistency and also to be worked effectively with economy in the consumption of power, for the proportion of the excavating and elevating devices to the water-elevators can be increased
10 or diminished, according to the character of the material, so that the work thrown on the wheel in cutting into and elevating the material can be raised by increasing or reducing the number of the shovels or cutting devices. Under this adjustment also the proportions of the water to the solid matter can be regulated to empty and clean out the receptacles and move the dredged material through the sluice.

25 Having thus fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In a dredging-machine of the character herein described, the dredging-wheel having
30 cutting and excavating devices on its periphery projecting forwardly at an angle in the direction of the rotation, and water-elevating devices of less projection than the excavating devices between the said excavating devices.

2. In a dredging-machine of the character herein described and operating with a continuous feed, the dredging-wheel having alternately-arranged cutting and excavating devices and water-elevating devices on its periphery. 35

3. In a dredging-machine of the character herein described, the combination of the scow having a well or opening, a dredging-wheel mounted to rotate in said opening in contact with the submerged bottom to be dredged, alternately-disposed cutting and excavating devices and water-elevating devices on the periphery of the wheel, the slanting aprons connecting the back of one device with the bottom of the device next in front, and a receptacle on the scow adapted to receive the material and water from the discharge side of the wheel. 40 45 50

4. The combination of the skeleton heads fixed on a common axle, the forwardly inclined and projecting plates fixed between the heads and having closed backs, the slanting aprons joining the back of one plate to the rear edge of the next adjacent plate in front, and the closed side flanges on the skeleton heads. 55 60

In testimony that I claim the foregoing I have hereunto set my hand and seal.

DENNIS JORDAN. [L. S.]

Witnesses:

EDWARD E. OSBORN,
M. REGNER.