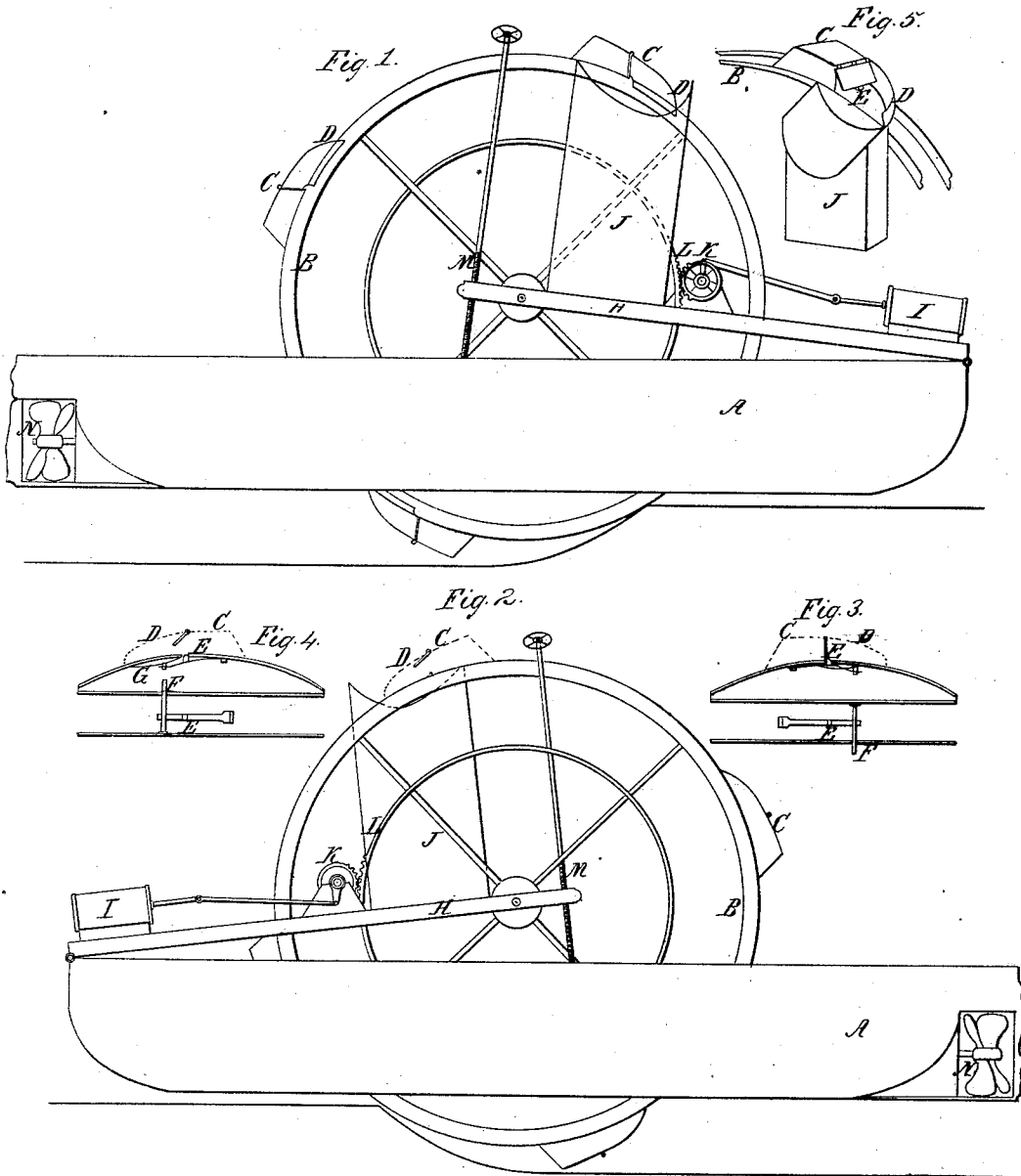


*A. Minard.*

*Dredger*

*N<sup>o</sup> 21,613.*

*Patented Sept. 28, 1858.*



# UNITED STATES PATENT OFFICE.

A. MINARD, OF NEW YORK, N. Y.

## DREDGING-MACHINE.

Specification of Letters Patent No. 21,613, dated September 28, 1858.

*To all whom it may concern:*

Be it known that I, ABEL MINARD, of New York, in the county and State of New York, have invented certain new and useful Improvements in Rotary Dredging-Machines; and do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, in which—

Figure 1 is a side elevation of one side, and Fig. 2 a similar view of the opposite side of the machine. Fig. 3 is a cut section of the upper bucket in Fig. 1 and a plan view of the tripping apparatus, and Fig. 4 similar views of the same parts in Fig. 2. Fig. 5 is a perspective view of the bucket and dumping chute detached.

The nature of my invention consists 1st, in the means employed to "trip" or empty the buckets of the load of material raised by them; 2d, in attaching the dredge wheel, dumping chute, and driving power to a hinged platform or frame, by which they are elevated and depressed in unison.

A is the hull of the dredge boat constructed with an opening or "well hole" through its center, in which the dredge wheel operates.

B is the dredge wheel formed with two rims and sets of arms, and properly braced to give to its periphery the requisite degree of rigidity to keep it from shaking or trembling in the execution of its work. Its periphery is further braced by the dredge buckets C being secured either on or within its rims as hereinafter described.

C are the buckets, secured either on or within the rims of the wheel B—thereby bracing and stiffening the periphery of the wheel—and having their front ends open to cut into the bank of earth or material to be excavated or dredged, and their rear end provided with a lid or shutter which is closed, and retained in that position, when they are to be fitted, and is "tripped" or opened to empty them from the load of material raised by them. In the rear of and attached to each bucket is a curved apron D by which the contents of the bucket are deflected and carried to the chute leading to the dumping scows, when the lid of the bucket is tripped to empty the bucket of its load. The lid of the bucket is retained and kept closed by the spring catch E, and is "tripped" to open by the lever F moving

under the curve G, as the wheel rotates, and releasing the catch from contact with the lid. The lid closes by its own weight, and is fastened by the spring catch, after the wheel rotates sufficiently to bring the bucket enough beyond the perpendicular line to cause the weight of the lid to act efficiently in this respect.

The dredge wheel B is attached to a hinged frame or platform H, upon which is also placed the engine I, (by which the wheel is operated,) as well as the chute J, (in, and upon which the excavated material is dumped to be deposited in the dumping scows), which admits of their being elevated or depressed together and in unison with each other. The dredge wheel is rotated by the spur wheel K on the engine shaft gearing into the segment wheel L attached to the wheel arms, and is elevated and depressed to proper position by the screw M worked by the engine which drives the wheel. N is a propeller wheel placed in the ordinary position in the stern of the dredge boat, and operated by an extra engine, by the rotation of which the dredge boat is moved to keep the dredge wheel in contact with the bank of material to be excavated, without relying upon anchors and cables to effect that purpose as ordinarily practiced, and which can be further used to navigate the boat from place to place when required, without its being dependent upon a tug or tow boat to move it.

The operation of the machine is as follows—The dredge boat being moored to the place required to be excavated, the dredge wheel is lowered by the screw M until the buckets on it are brought in contact with the bottom of the river or place to be excavated. The dredge wheel is then rotated, the buckets on its periphery cutting into and filling with the earth, and retaining the load of earth in them until they arrive at or near the highest point of the periphery of the wheel, when they are "tripped" and unloaded by the lever F moving under the arm G to release the spring catch E from contact with the lid of the bucket, allowing the contents of the bucket to fall against the apron D and upon the chute J, from which they fall into the scow or vessel placed alongside the machine to receive them. By the continued rotation of the dredge wheel the bucket is carried down until the weight of its lid causes the lid to close and be fas-

tened by the spring catch E, ready to be again filled as before. As the buckets remove the earth or material from the place to be excavated, the dredge wheel is lowered 5 by the screw M until the buckets have excavated to the required depth, when the propeller wheel N is revolved "ahead" to keep the dredge wheel in contact with the bank so formed, until a trench of that depth is 10 made as far as the excavation is required, when another cut is made as before and so continued until the excavation is completed.

Rotary dredge wheels are known and used, but the dumping attachments of them have 15 always been made stationary, and have always been located but little above the height of the center of the dredge wheel, so that it has been found difficult in practice to clear the dredge wheel of the material raised 20 by it as fast as it raises it, on account of the slight elevation of the dumping chute above the level of the dumping scows, and also to cause that attachment to work satisfactorily at all the different heights at which the 25 dredge wheel may be operated, from the chute standing too nearly vertical when the wheel is elevated to its highest point and too nearly horizontal when the wheel is lowered to its lowest point. The driving power 30 of them has always been fixed and stationary, and requires complicated connections to transfer its motion to the dredge wheel at the various points of height at which it might be placed. These objections are all 35 overcome and remedied by my improvements, as the dumping chute and driving power are attached to the same frame as the dredge wheel, and are elevated and depressed with it, preserving at all times a 40 sufficient elevation to the chute to enable the material raised to be cleared from it with facility, and admitting the driving power to operate upon the dredge wheel at all points

of the latter's elevation and depression without the aid of other than the simple gearing 45 shown. The combination of the propeller wheel with the dredge enables the dredge wheel to be kept in contact with the bank of earth or material to be excavated with greater exactness than is possible to be effected 50 by the use of a cable running on a windlass and attached to an anchor as ordinarily practiced, as the movement of the dredge by the latter is uniform, irrespective of the different qualities of the material that 55 the dredge wheel may be brought in contact with, while the other is self compensating and keeps the wheel in contact with the material to be excavated under a uniform pressure. 60

I do not claim the rotary dredge wheel, nor placing buckets upon the periphery of such wheel, nor the manner of applying power to the same, nor the means employed for raising and lowering it, but 65

What I do claim as my invention and desire to secure by Letters Patent is—

1. The combination of the spring catch E, lever F and curve G, with the lid or shutter of the bucket C, for the purpose of tripping 70 the lid to empty the bucket of its contents as described.

2. The attachment of the dredge wheel B, the engine I, and chute J, to the hinged frame or platform H as described, which 75 attachment allows the chute J to retain its relative position to the dredge wheel at all points of the latter's elevation, and the engine I to be connected to the wheel to work it at all points of its elevation without the 80 intervention of other connections or gearing than that shown.

A. MINARD.

Witnesses:

M. HASKELL,  
FRANCIS S. LOW.