

T. SYMONDS.

Dredgers.

No. 136,187. Patented Feb. 25, 1873.

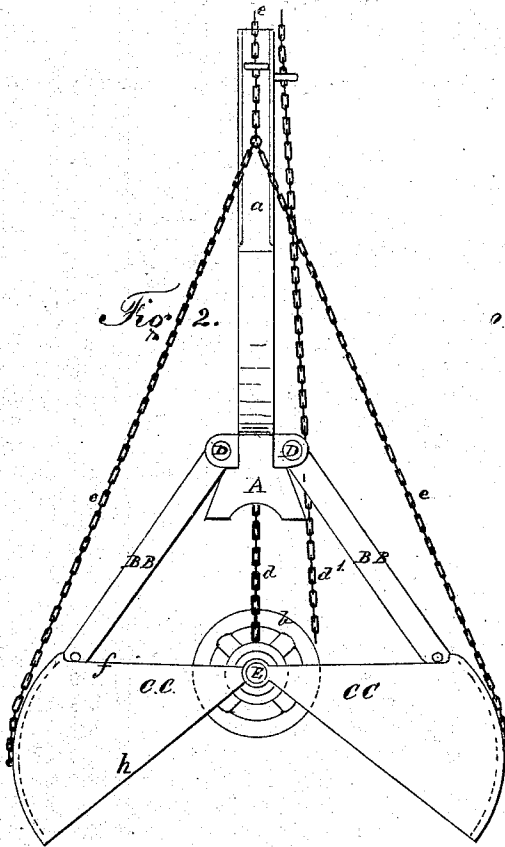


Fig. 1.

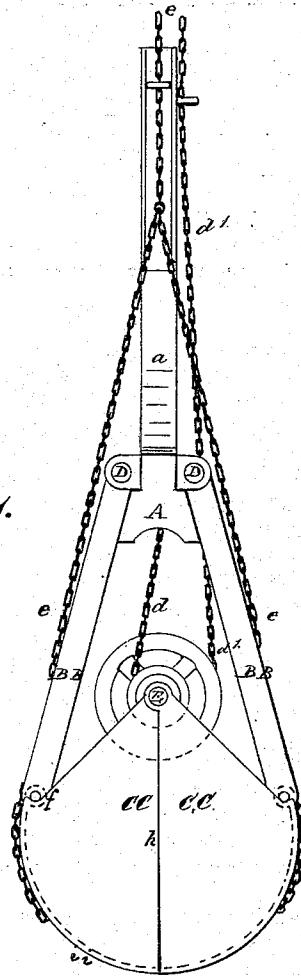
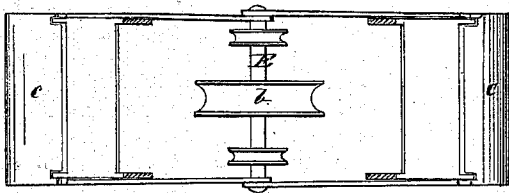


Fig. 3.



Witnesses
Benjamin C. Pole
J. C. Lathrop

Inventor
Thomas Symonds
by his attorney
Wm. H. Clifford

UNITED STATES PATENT OFFICE.

THOMAS SYMONDS, OF PORTLAND, MAINE.

IMPROVEMENT IN DREDGERS.

Specification forming part of Letters Patent No. 136,187, dated February 25, 1873.

To all whom it may concern:

Be it known that I, THOMAS SYMONDS, of Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Dredging-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 shows a side elevation when the buckets are closed; Fig. 2, the same when the buckets are opened. Fig. 3 is a plan view, partly in section, with stock removed.

Same letters show like parts.

The object of my invention is to produce a dredging device of simple construction, and having increased power and facility of operation.

The construction of my improved dredging-machine may be thus described: *a* shows the stock, and *A* the brace-plate attached thereto, which holds the stock rigid when the buckets are closed. *C C* show the buckets, the peculiar form of which is shown by the shape of the side plates. *B B* show the variable arms on which the buckets are hung. These arms are pivoted to the foot of the stock at *D D*, and to the buckets at their outer top edges. *E* shows the rotary shaft, which connects the two top centers of the buckets. On this shaft are the two smaller wheels and the larger one, *b*. From the two smaller wheels extend the chains *d* attached to the said wheels, and also to the base of the stock *a*. To the wheel *b* is attached the closing-chain *d'*, which passes up along the stock, and is operated by any appropriate machinery on the boat or other place where the engine may be located. *e* shows the bifurcated opening-chain, which also passes up along the stock, and is drawn upward when the buckets are opened.

As will be observed, the buckets are pivoted at their centers to each other; and this center moves upward as they are closed and drops as they are opened.

The stretch or expanding capacity of the buckets results from the greater length of the line *h* over the line *f*. The longer sides of the

plates forming the buckets are of the same length as the entire diameter of the circle of which the curved sides *i i* are a portion of the boundary.

The arms *B B* being pivoted at *D D*, as well as to the outer edges of the buckets, they also expand and approach each other at their lower ends as the buckets are opened and closed.

By drawing up the bifurcated chain *e* the buckets are opened, and by drawing upward on the other chain, *d'*, the buckets are closed.

It is plain that the leverage obtained on the buckets can be increased at will by increasing the size of the larger wheel on the shaft *E*; and it may be remarked that the larger the wheel is made the less the tendency to lift the buckets from the soil or mud when they are being shut or when scooping up the mud.

When the buckets are opened the longer and lower sides *h* are not horizontal, as is the case with a variety of dredgers of this class, but they are oblique or inclined. This, together with the form of the curved sides *i i*, enables the buckets to be in the best position for entering the mud at the commencement of the operation of scooping—that is to say, a position that tends most directly to force the cutting or digging edges immediately into the ground. This attachment of the shaft *E* to the buckets themselves and the rising and sinking of the point where the shaft unites the two buckets impart a peculiar motion to the digging-edges of the buckets, which is of the greatest utility in dredging. In other dredgers these inner edges or centers of the buckets have been pivoted to a fixed point on the foot of the stock. This fixing the points where the buckets are connected to the stock gives a scraping movement, in some degree, instead of a penetrating and more nearly circular motion.

Plates are attached between the arms *B*, from one to the other in the direction of the width of the buckets, to brace the arms and increase the capacity of the buckets themselves.

The power to close the buckets is applied at the center of the circle in part described by their movement, and at the top of the buckets. In other dredgers of this class levers extend to the bottoms and inner corners of the buckets.

When the buckets are opened the brace-plate *A* no longer holds the arms *B* rigid; but

under those circumstances, in consequence of the pivoting of the arms B to the stock *a*, and the arms again to the buckets, a swaying motion is permitted to the stock, which much diminishes the liability to its breaking if the buckets should strike the ground unevenly.

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

1. A dredger composed of two buckets, C C, which, when closed, form more than a half cylinder, the said buckets being hung on variable arms B B and operated at the top center by a traveling rotating shaft, which unites the said buckets at that point, and has its bear-

ings in them at their point of connection, as herein set forth.

2. The brace-plate A, in combination with the variable arms B, as herein set forth.

3. The combination of the stock *a*, the moving or variable arms B, and the buckets C, as herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of December, 1872.

THOMAS SYMONDS.

Witnesses:

WM. HENRY CLIFFORD,
FRANK H. JORDAN.