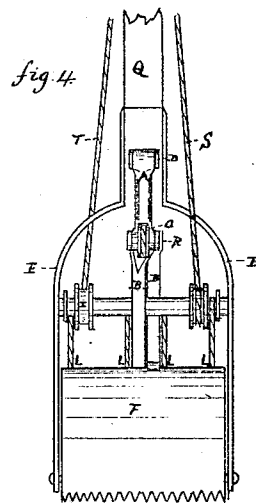
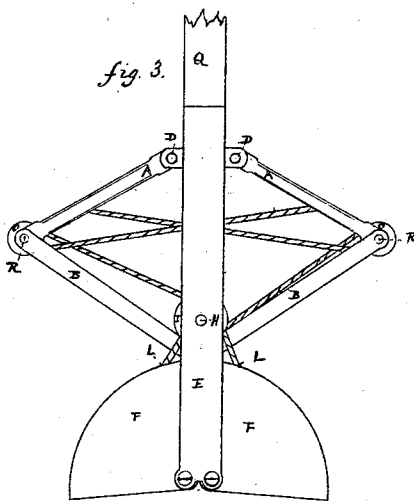
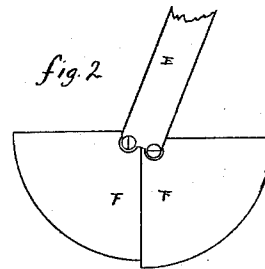
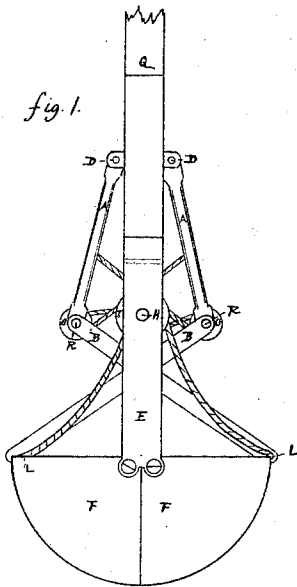


THOS. SYMONDS.

IMP'D EXCAVATOR.

111787

PATENTED FEB 14 1871



Witness
George E. Rich
Edmund H. Wilson

Inventor
Thomas Symonds
Per M. Henry Clifford
 atty.

United States Patent Office.

THOMAS SYMONDS, OF PORTLAND, MAINE, ASSIGNOR TO JOHN B. CURTIS,
OF SAME PLACE.

Letters Patent No. 111,787, dated February 14, 1871.

IMPROVEMENT IN EXCAVATORS.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, THOMAS SYMONDS, of the city of Portland, in the county of Cumberland and State of Maine, have invented a new and useful Improved Excavator; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, in which—

Figure 1 is a side elevation of my improved excavator with the bucket shut;

Figure 2 is a side view of the bucket when the shaft or beam is not vertical;

Figure 3 shows the excavator when the bucket is open; and

Figure 4 is a front view of same.

My invention relates to an improved method of opening and shutting the buckets of dredging-machines.

By the method now in use the buckets are opened and shut by means of levers connected with the edges of the buckets and a slide moving up and down on the beams or poles by which the buckets are lowered or raised. It is evident that by this method there must be a loss of power and no large amount of leverage.

My method is illustrated in figs. 1, 3, and 4 of the drawing.

F F show the buckets, which are of the usual form, and are connected with the frame E in the usual manner.

The frame E E, holding the buckets and the shaft H, is connected with one beam or pole Q, instead of with two, as is usual.

Connected with the edges of the buckets F F are the two levers B B, each of which is pivoted at R to an arm, A.

The other end of the arm A is pivoted to the beam or pole at D.

The pivot R has also the pulley O between the bifurcation of the arm A.

At the center of the arms A A are attached the ropes or chains operating the buckets and shutting the same. Each of these ropes passes under and over the pulley opposite the arm to which it is attached, and then in the same direction around the shaft H, to which they are also attached.

Connected with the buckets at L are the ropes which open the buckets, and which are attached to the shaft H and pass around it in a direction opposite to that in which the ropes connected with levers A A pass around it.

The shaft H is rotated by the ropes S and T, one giving it a rotation in one direction, the other rotating it in the other direction.

The great superiority of my arrangement and construction is obvious in the greater amount of leverage obtained, and in the power saved.

The arms A and B form a toggle-joint, the power of which is well known, and it must be evident that the more nearly shut the buckets F F are, the greater the force applied to shut them by means of the toggle formed by the arms mentioned.

I do not claim such a device as that described and claimed in patent No. 73,678, granted to Thomas and Augustin Walsh, January 21, 1868. The difference between this device and mine is—

First, in the manner in which the arms or levers closing buckets are attached to the same.

Second, in the arrangement of the chains by means of which power is applied to said levers.

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

The combination of the buckets F F, of the arms A A and B B, applied as described, the handle Q, the shaft H, and the ropes, arranged as set forth.

THOMAS SYMONDS.

Witnesses:

WILLIAM H. CLIFFORD,
GEORGE E. BIRD.