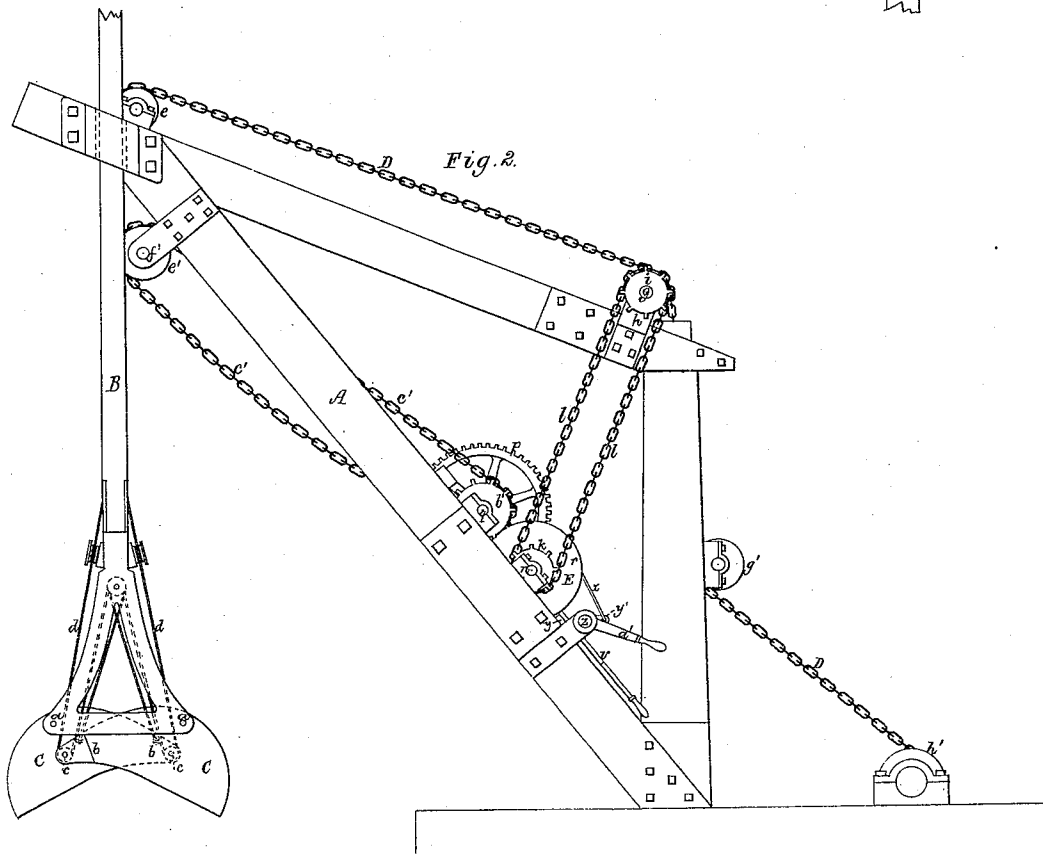
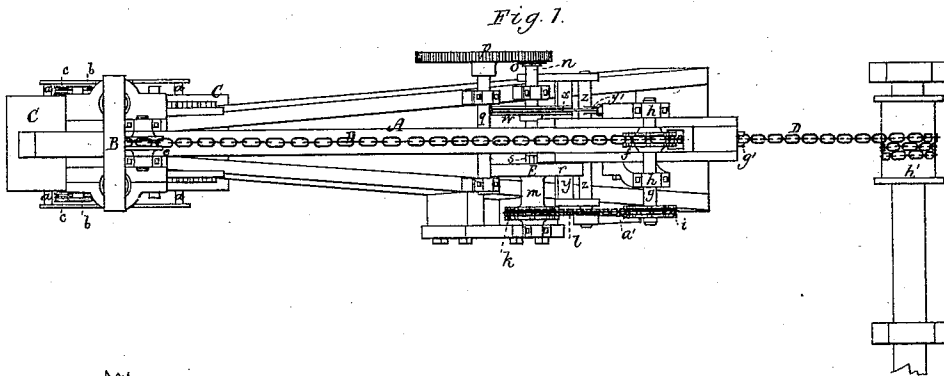


G. SOUTHER.
Dredging-Machines.

No. 153,625.

Patented July 28, 1874.



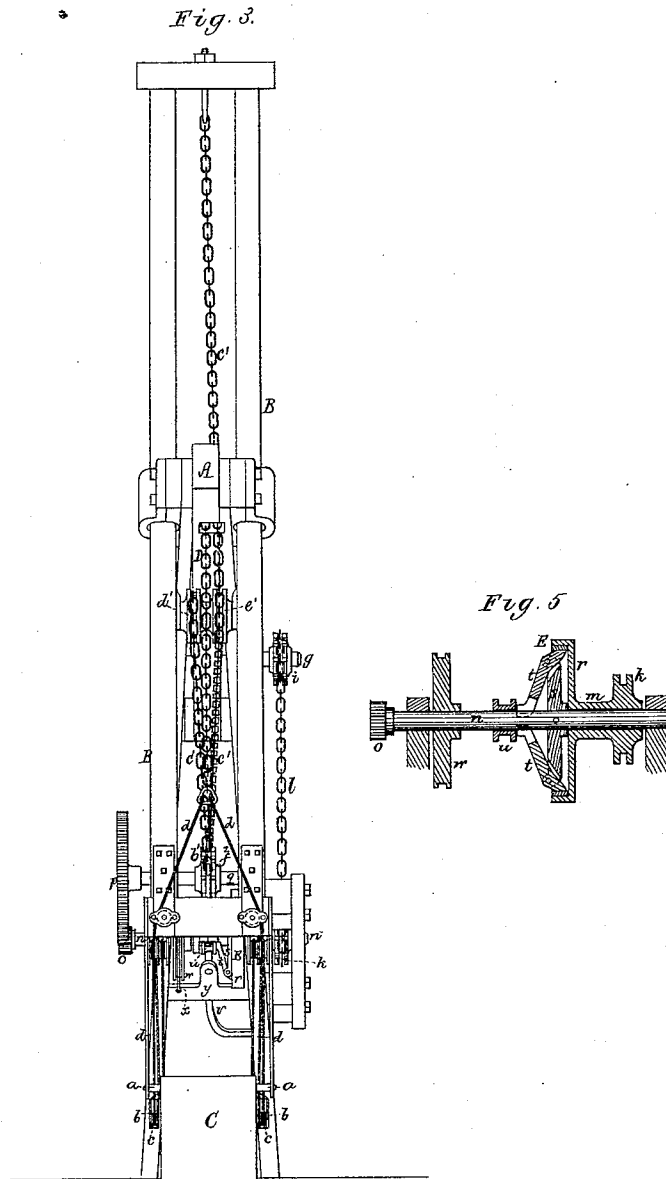
Witnesses
S. N. Piper
S. N. Hollen

George Souther.
by his attorney.
R. H. Eddy

G. SOUTHER.
Dredging-Machines.

No. 153,625.

Patented July 28, 1874.



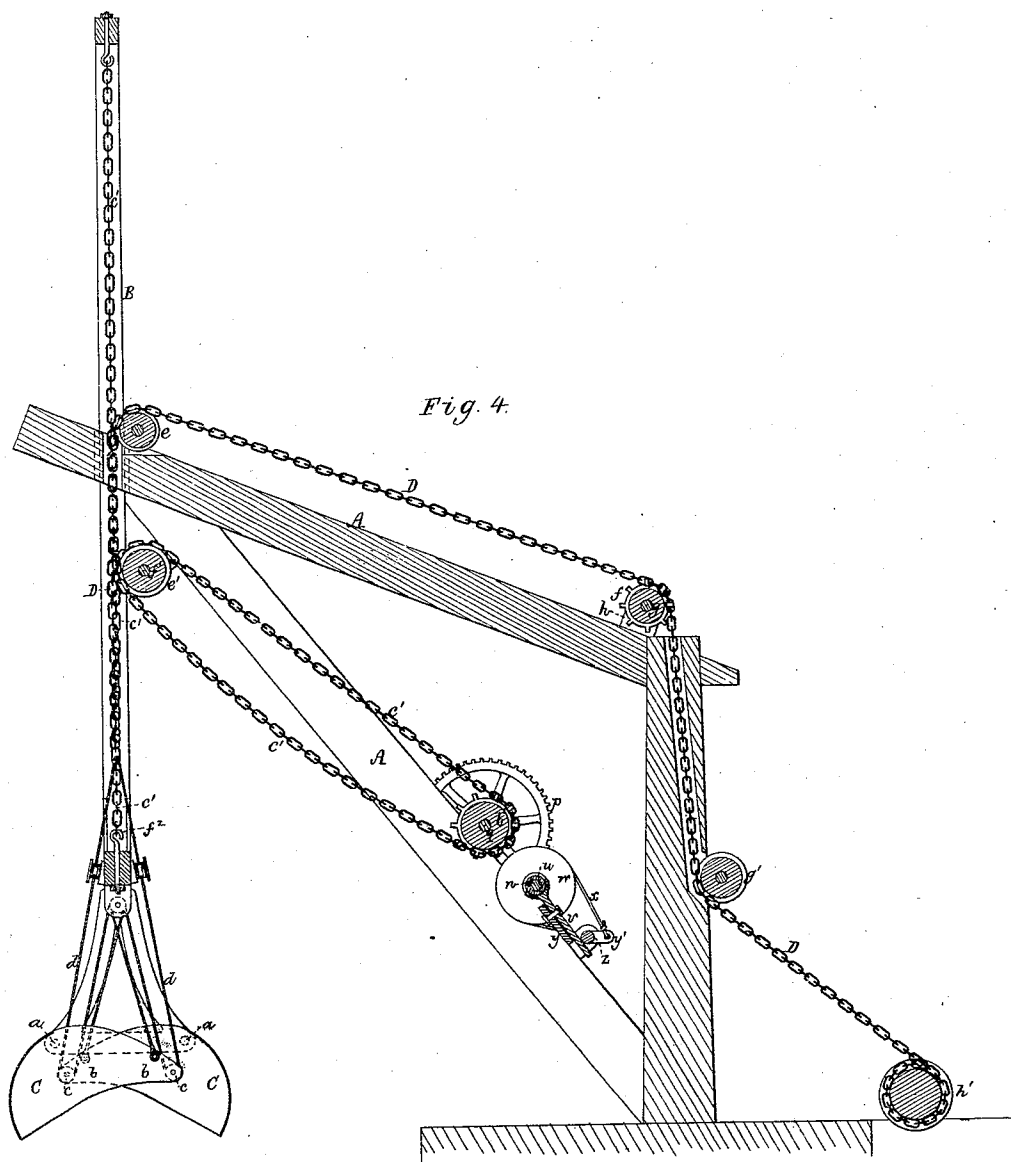
Witnesses.
S. W. Piper.
L. N. H. Cole.

George Souther.
by his attorney.
N. J. Ledy.

G. SOUTHER.
Dredging-Machines.

No. 153,625.

Patented July 28, 1874.



Witnesses:

S. N. Piper.

L. N. Höller

George Souther.

by his attorney.

Reddy

UNITED STATES PATENT OFFICE.

GEORGE SOUTHER, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN DREDGING-MACHINES.

Specification forming part of Letters Patent No. **153,625**, dated July 28, 1874; application filed July 2, 1874.

To all whom it may concern:

Be it known that I, GEORGE SOUTHER, of Boston, of the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Machine for Dredging Earth; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a top view, Fig. 2 a side elevation, Fig. 3 a front elevation, and Fig. 4 a longitudinal section, of a dredging-machine as improved by me. Fig. 5 is a vertical section of the clutch, shaft, and the mechanism applied thereto.

In such drawings, A denotes the crane, through which there is arranged, to slide vertically, the scoop supporting-frame B, all being as represented. At the lower part of the frame B is a pair of scoops, C C, each of which is pivoted to the scoop-frame, the positions of the pivots being shown at *a a*. Each scoop has two arms, *b b*, projecting inward from it, as shown, there being in each arm near its outer end a sheave, *c*. Chains or branch ropes *d*, fastened to the frame at suitable points above the scoops, pass through the scoop-arms or about their sheaves, there being one of said ropes or chains to each arm, and thence are carried upward and attached to a hoisting-chain, D. The said chain D extends upward through the crane and over a sheave, *e*, arranged therein, as shown. Thence the chain passes to and partly around a sprocket-wheel, *f*, fixed upon a shaft, *g*, arranged at the rear part of the crane and supported in standards *h h*, projecting upward therefrom. The said shaft has fixed upon it another sprocket-wheel, *i*, around which and a third sprocket-wheel, *k*, an endless chain, *l*, is arranged, as shown. The wheel *k* is fixed on a tubular shaft, *m*, which revolves freely on another shaft, *n*, provided at one end with a toothed pinion, *o*, that engages with a gear, *p*, fixed upon another shaft, *q*, all being arranged with respect to the crane in manner as represented. There is applied to the shafts *m* and *n* a friction-clutch, E. This clutch consists not only of a flanged wheel, *r*, fixed to the shaft *m*, but a diametric cross-head, *s*, fixed to the shaft *n*, and carrying two friction brakes or levers,

t t, arranged as shown, they having their tails disposed against a grooved slide, *u*, arranged upon the shaft *n*. A lever, *v*, applied to the crane engages with the slide and serves to move it back and forth on the shaft *n*, in order to force the clutch-levers against the wheel-flange, or allow them to free themselves therefrom, as occasion may require. There is fixed on the shaft *n* a brake-wheel, *w*, provided with a friction brake or band, *x*. This band at its lower end is fastened to a cross-bar, *y*, that supports the fulcrum of the lever *v*. The band, at its other end, is connected to an arm, *y'*, extending from a shaft, *z*, arranged as shown, and provided with a lever, *a'*, extended from it near one end of it. There is fixed upon the shaft *g* a sprocket-wheel, *b'*, around which a chain, *c'*, is led, as shown, to and over one of two guide-wheels or sheaves, *d' e'*, arranged upon a shaft, *f'*, disposed as represented. From the wheel *d'* the chain descends, and at its end is fastened to a standard, *f''*, projecting upward from the scoop-frame. Furthermore, from the under side of the wheel *b'* the chain *c'* is led to and underneath the wheel *e'*, and thence upward and is fastened to the upper part of the scoop-frame. The hoisting-chain D, before mentioned as passing over the sprocket-wheel *f*, is carried downward therefrom through the crane-post, and thence under a grooved guide-wheel, *g'*, and thence to a windlass or hoisting-drum, *h'*, all being arranged as represented. The hoisting-chain D and its branch ropes *d* and the drum *h'* are to effect the closing of the scoops and the elevation or rising of them and the scoop-frame upward. The chain *c'* which, at its two ends, is fastened to the scoop-frame and runs against the guide-wheels *d' e'* and about the sprocket-wheel *b'* is, with such wheel, to effect forcing downward of the scoop-frame and scoops, while the latter are in the act of being closed to dig into earth. And furthermore, the said chain and its actuating sprocket-wheel are to effect lowering of the scoop-frame. They also support it while the scoops are being opened, the hoisting-chain being allowed to run free while the scoop-frame is descending.

From the above it will be seen that in operating the machine we are to proceed as follows: First, we press down the brake-lever *a'*,

so as to actuate the brake x of the wheel w and stop the shaft n from revolving. This having been done, we let go the windlass h' , in order to set free the hoisting-chain. The scoops will then open apart by their own weight. Next, the pressure on the brake-lever a' is to be relieved, in order to allow the weight of the scoop-frame and scoops to depress such frame and scoops, so as to carry the latter into contact with the earth. Next, we are to revolve the windlass, so as to wind upon it the hoisting-chain, in order to cause the scoops to close or move toward one another. At the same time, in order to force the scoops downward, while they are in the act of closing together, we seize the friction-clutch lever v and move it so as to clutch together the shafts m and n , and thereby cause the shaft n to be revolved, and effect, through the pinion o and gear p , the revolution of the sprocket-wheel b' . In doing this we shall actuate the chain c' in a manner to cause it to pull downward the scoop-frame. As soon as the scoops may have closed we let go the friction-clutch lever. The windlass continuing to revolve, the scoop-frame will be raised by the hoisting-chain to the necessary height.

In order to dump the load after the crane may have been turned so as to carry the scoops over the scow or the place of deposit, we press down the brake-lever a' and let go the windlass. The scoops will then open and discharge the load, after which the crane is to be moved back to place and the scoops and their frames dropped down again upon the earth.

The scoops turn on separate pivots a , arranged at or near the vertexes of their arched backs and apart from one another in the frame B , in manner as shown. This enables the scoops to open by their own weight or that of the load whenever it may be desirable to dump the load or open the scoops. In the United States Patent No. 11,242, to Taggart, the two scoops are represented as having a common center or pivot, arranged in or near the ends of the diameters of the scoops, such requiring the scoops to be provided with lines for opening

or dumping them, such lines being fixed to the crowns of the arched backs of the scoops. By my arrangement of the pivots of the scoops I save all necessity of such lines or any analogous means for opening or dumping the scoops.

The scoops, by their construction, and being furnished with the arms and pivoted to the scoop-frame, in manner as shown and described, readily open, by their own weight or that of the load, when the hoisting-chain is set free and the scoop-frame held stationary.

I do not claim a windlass and chain applied to an excavator-crane and a simple bucket-scoop, and used for raising the latter; nor do I claim, in combination therewith, mechanism for forcing the bucket forward into the earth while such bucket may be in the act of being raised. In my dredging-machine the scoops, to take the earth, are depressed while being closed; and therefore

I claim—

1. In combination with the scoop-frame B , the two scoops C and the mechanism for closing the said scoops, such mechanism consisting of the scoop-arms b , the branch lines d , the hoisting-chain D , and the windlass h' , the mechanism for forcing the scoops downward while they may be in the act of being closed and otherwise operating them, as explained, (this latter mechanism consisting of the sprocket-wheels f i k , shaft g , endless chain l , shafts m n , clutch E , lever v , brake x , brake-wheel w , lever a' , gears o p , shaft q , sprocket-wheel b' , chain c' , and guide-wheels d' e'), all being applied together and to the crane, substantially in manner, and to operate, as explained.

2. Two scoops, C C , combined with the frame B by separate pivots a , arranged at or near the vertexes of the curves of the backs of the scoops, all substantially as explained and represented.

GEORGE SOUTHER.

Witnesses:

R. H. EDDY,
J. R. SNOW.