T. Z. COLE.

DREDGING-MACHINE.

No. 186,113. Patented Jan. 9, 1877.

Fig. 1.

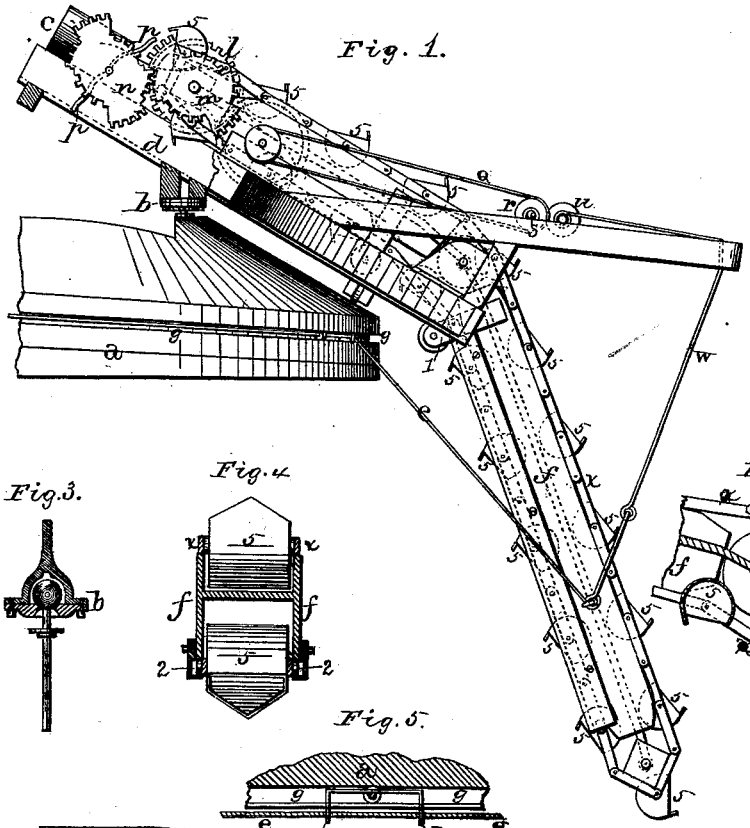


Fig. 3.

Fig. 4.

Fig. 6.

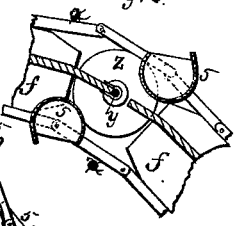


Fig. 5.

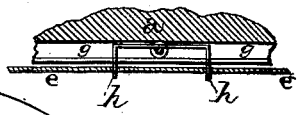


Fig. 2.

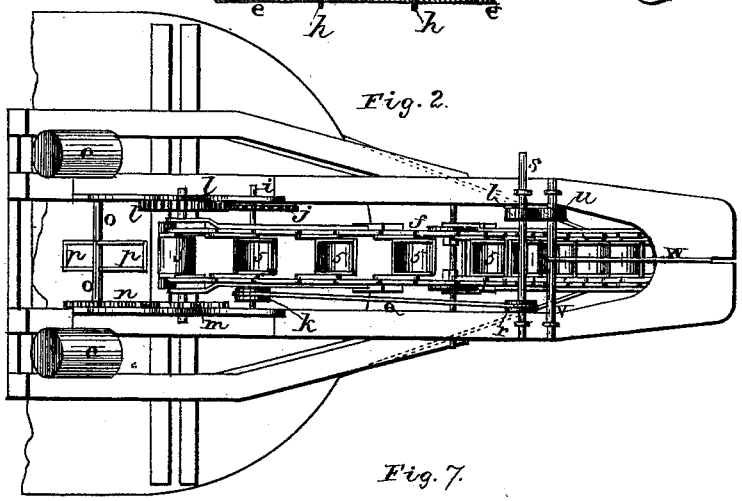
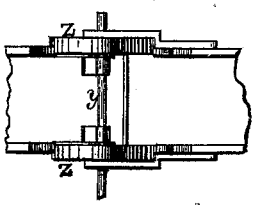


Fig. 7.



WITNESSES.

Wm. Garner,

F. M. Burnham.

INVENTOR.

T. Z. Cole.

per

F. A. Lehmann, Atty.

UNITED STATES PATENT OFFICE.

THOMAS Z. COLE, OF NEWARK, DELAWARE, ASSIGNOR OF ONE-FOURTH HIS RIGHT TO JOHN E. WALTON, OF SAME PLACE.

IMPROVEMENT IN DREDGING-MACHINES.

Specification forming part of Letters Patent No. **186,113**, dated January 9, 1877; application filed July 10, 1876.

To all whom it may concern:

Be it known that I, THOMAS Z. COLE, of Newark, in the county of New Castle and State of Delaware, have invented certain new and useful Improvements in Dredging and Excavating Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in dredging-machines; and it consists in the arrangement and combination of parts that will be more fully described hereinafter.

Figure 1 represents a side elevation of my invention. Fig. 2 is a plan view of the same. Figs. 3, 4, 5, 6, and 7 are detail views, representing the different parts.

a represents the front of the scow, the front end of which is made circular, while the top end is made both round and slanting, and serves as a bearing, upon which the frame of the dredging-machine moves as it swings around on its pivot *b*. This pivot is the steam-pipe, which conveys the steam from the boiler to the engines *c* on top of the frame *d*, and which pipe is provided with a ball-and-socket joint, so as to allow the frame a free movement. The frame *d* inclines downward, as shown, and is made to move horizontally around by the chain *e*, which extends forward and is fastened to each side of the metallic frame *f*.

In the end and around the side of the scow is made a flanged groove, *g*, in which slide the guides *h* for the chain. These guides consist of long plates, having their ends bent outward at right angles, through which the chain passes, and which arms are provided with two friction-rollers, so as to make the arms move readily back and forth in the groove *g*.

The engines *c* are connected with the driving-shaft *i*, upon which is placed a gear-wheel, *j*, and a pulley, *k*. The wheel *j* meshes with the gear *l*, which is placed upon the shaft that operates the endless chain of buckets. Upon the other end of this shaft is placed a wheel, *m*, of the shape shown, which meshes with a similar wheel, *n*, placed upon the shaft *o*, to which the cleaners *p* are secured. The cleaners are mere skeletons, as shown, which move around the inside of the buckets 5; and, as they must move quickly while cleaning the buckets, and more slowly while another bucket is being moved forward to be cleaned, the wheels *m n* are made variable, as shown, so as to give the cleaners a varying motion.

The metallic frame *f* is made in two parts, the upper one of which is secured rigidly to the frame *d*, while the lower part is hinged to the other, so as to raise the apron of buckets up out of the water, or to lower them down to any desired depth. For this purpose there extends a belt or chain, *q*, from the pulley *k* to the pulley *r* on the shaft *s*, which shaft is also provided with a friction-pulley, *t*, and made to slide back and forth, so that the pulley *t* can be moved in and out of gear with the pulley *u* on the windlass-shaft *v*. From the windlass extends the chain *w* over the end of the frame *d*, and fastens to the bail that is attached to the frame *f*.

In order to prevent the endless chain *x* from tightening and slackening as the lower part of the frame *f* is moved up and down, I place on the pivot-shaft *y* the two wheels *z*, which serve to keep the chain always the same, no matter what position the frame is in, at the same time that they act as friction-rollers.

Extending downward from each side of the upper end of the lower part of the frame *f* is a bar, which has a friction-roller, 1, on its lower end, which acts as a guide to the chain *x*. In the lower edge of the frame *f*, along its entire width, is formed a groove, 2, in which the chain travels, and which groove acts as a support for the buckets, and prevents them from sagging down.

By making the front end of the scow incline downward to the water's edge, the frame *d* is held at just about the angle at which the buckets rise from the water, and they are thus prevented from discharging their contents prematurely. This form also allows the end of the frame *f*, while resting on the bottom of the harbor, to support the buckets, so that they will always touch the ground, even if the scow does rise and fall with the waves.

Having thus described my invention, I claim—

1. The combination of the two variable wheels *m n*, constructed, as shown, with the scrapers or cleaners *p* and endless chain of buckets, substantially as set forth.

2. In combination with a dredging-machine, a scow having its end inclined, as described.

3. The scow *a*, having the groove *g* around its front end, in combination with the guides *h* and chain *e*, substantially as set forth.

4. The combination of the frame *f*, divided into two parts, and pivoted together by the shaft *y*, on which are placed the two wheels *z*, with the chain *x* and supporting-rollers 1, substantially as shown.

In testimony that I claim the foregoing I have hereunto set my hand this 3d day of July, 1876.

THOMAS Z. COLE.

Witnesses:
R. M. BARR,
S. R. CHOATE.