C. J. SANDS.

Dredging-Bucket.

No. 169,299. Patented Oct. 26, 1875.

Fig: 1.

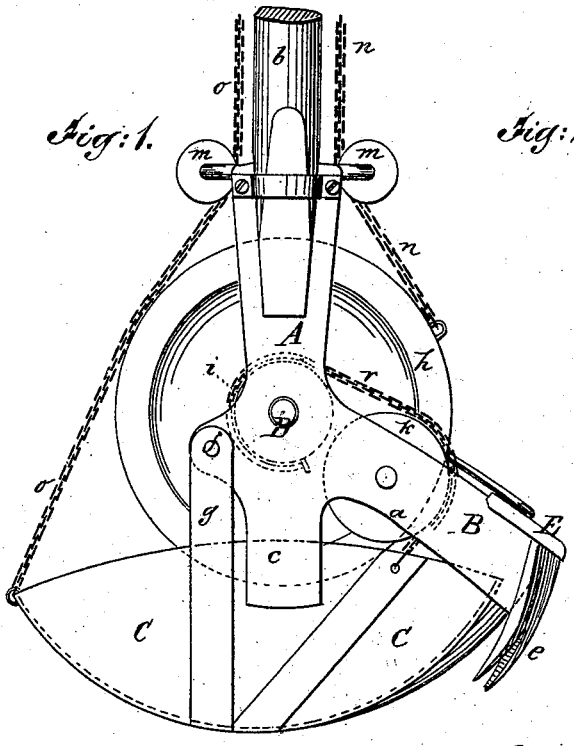


Fig: 2.

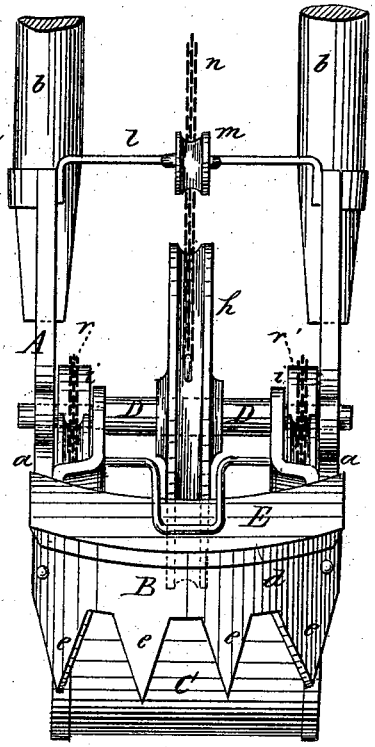
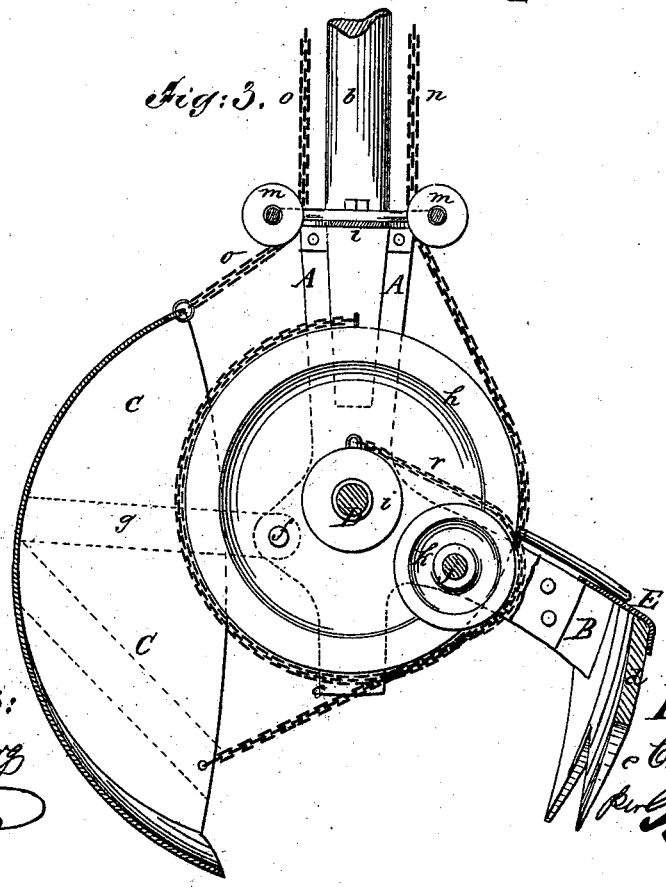


Fig: 3.



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UNITED STATES PATENT OFFICE

CHARLES J. SANDS, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN B. WOOD, OF SAME PLACE.

IMPROVEMENT IN DREDGING-BUCKETS.

Specification forming part of Letters Patent No. **169,299**, dated October 26, 1875; application filed Sept-mber 22, 1875.

To all whom it may concern:

Be it known that I, CHARLES J. SANDS, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Dredging-Buckets; and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

This invention is in the nature of an improvement in dredging-buckets; and the invention consists in a dredging-bucket constructed with a supporting-frame provided with a device that shall hold or anchor the frame to the bottom that is being excavated.

In the accompanying sheet of drawings, Figure 1 is a side view of my improved dredging-bucket; Fig. 2, an end view, showing anchoring device; and Fig. 3, a side view, partly in section, showing bucket open.

Similar letters of reference indicate like parts in the several figures.

The bucket hereinafter described is designed more particularly to be used in dredging out clay, sand, and other hard and compact ground. To that end I construct the supporting-frame A of my bucket with a device, B, which, in this instance, is formed by arms *a*, extending at a suitable angle or curve from that part *c* of the frame which projects below the guide-poles *b*. To the extremities of these projecting arms *a*, and extending from one to the other, is secured a plate, *d*, the lower edge of which has formed upon it, or attached to it, a series of teeth, *e*, projecting downward. To the frame A, and on the side opposite to the radial arms *a*, are affixed, by means of pivotal bolts *f*, the lugs *g*, by means of which the bucket C is secured to the supporting-frame. These lugs are affixed to the upper edge of the bucket, on each of its sides, and in the rear of a central point, measuring from the front to the rear end of the bucket. The bucket itself is of quadrant form, and its front edge may be armed with teeth, or otherwise provided with devices for the better scraping up of the hard ground when it comes in contact with the same. Passing from one side of the frame A to the other, and resting in suitable bearings, is a shaft, D. To this shaft is properly secured, at its center, a large pulley-wheel, *h*, and also affixed to this shaft, near the inner sides of the frame, are two smaller pulley-wheels, *i i;* and secured in any desirable manner to the arms *a*, so as to turn freely on central bolts or axes *j*, are two pulley-wheels, *k k*. To the span *l*, immediately above the large pulley-wheel *h*, are affixed on each side two pulley-wheels, *m*. To the large pulley-wheel *h* is secured one end of a draw-chain, *n*, which passes around a groove formed in the periphery of the wheel, and the other end of the chain passes upward, coming in contact with one of the pulley-wheels *m;* and to the rear end of the bucket C, near the upper edge of the same, is affixed the end of a draw-chain, *o*, and this also passes upward in contact with the other pulley-wheel *m*. To the small pulley-wheels *i i* are secured the ends of draw-chains *r* and *r'*. These chains pass from the pulley-wheels to and around the pulley-wheels *k k*, and thence to the upper edge of the bucket C, near the front end of the same, where the other ends of the draw-chains *r r'* are secured.

Now, my bucket being constructed substantially as above described, its operation is as follows: When the bucket is lowered through the water to the ground it is designed to dredge, the force of impact drives the teeth *e* into the ground, firmly holding the supporting-frame anchored to the ground, the bucket C being opened before the bucket is lowered. Then, suitable power being applied to the draw-chain *n*, the pulley-wheel *h* is revolved, causing the shaft D to likewise revolve, which forces around the pulley-wheels *i i*, and these pulley-wheels, as they revolve, carry around with them the draw-chains *r r'*, hauling in, by this operation, the bucket C, the edge of which is resting upon the ground; and as the bucket is thus drawn inward it scrapes and gathers up the ground, and this scraping operation is continued until the lower edge of the bucket travels or swings entirely under the frame, when its edge will pass under the teeth *e*, disconnecting them from their holes in the ground. The bucket being now filled with material by this operation, it is raised by the draw-chains *n* and *o* to the desired height for discharging,

the draw-chains, during the hoisting operation, keeping the bucket tightly closed. The bucket is discharged by slacking the draw-chain *n* and hauling taut the draw-chain *o*, which operation opens the bucket to its fullest extent, in which position it is maintained until it is again lowered and filled, in the manner hereinbefore described.

If desired, an apron, E, may extend across from arm to arm *a*, immediately above the teeth *e*, which will tend to serve as a fender, and prevent the ground, as it is scraped out, from being forced away from the bucket, the apron keeping it in place until the bucket has scooped it up. It will also serve to keep the load in the front end of the bucket from being washed out.

From the foregoing it is obvious that a bucket constructed as I have described it will be particularly efficacious for dredging hard, unyielding ground, such as clay, sand, &c.; for, the frame of the bucket being firmly anchored, the entire force of the engine may be applied to a single bucket, which, in addition to the leverage obtained by reason of the fixedness of the frame to the ground, the bucket will be enabled to scrape up the clay, &c., and be filled expeditiously, and with great facility.

A very great advantage is had by using a bucket made of a single receptacle, inasmuch as by this construction all the material which is scooped up by it will be retained, which, when dredging sand and silt, will be of great importance, there being no opportunity for the sand and light material to leak out through joints or otherwise.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The supporting-frame of a dredging-bucket, constructed to anchor or hold said frame to the ground, substantially in the manner and for the purpose described.

2. The combination of a dredging-bucket with a holding or anchoring device secured to the supporting-frame, substantially in the manner and for the purpose described.

3. In a dredging-bucket, the holding or anchoring device thereof, constructed with a series of projecting teeth, substantially as and for the purpose described.

4. In a dredging-bucket, the combination of a central pulley-wheel with two or more pulley-wheels affixed to the arms of the anchoring device, substantially as shown and described.

5. In a dredging-bucket, the combination of an anchoring device with an apron, substantially as and for the purpose described.

6. A dredging-bucket constructed of a single undivided receptacle, with closed and unadjustable bottom, and secured to a supporting-frame by, and turning on, pivotal bolts, substantially in the manner and for the purpose described.

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