T. SYMONDS.
Dredging Buckets.

No. 198,957. Patented Jan. 8, 1878.

FIG. I.

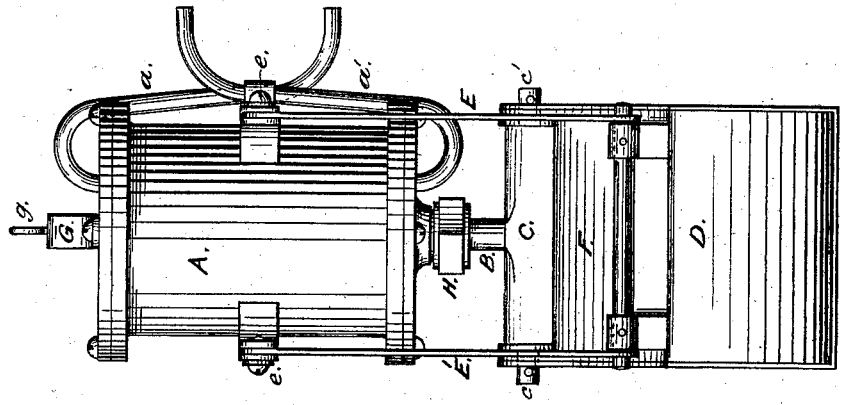
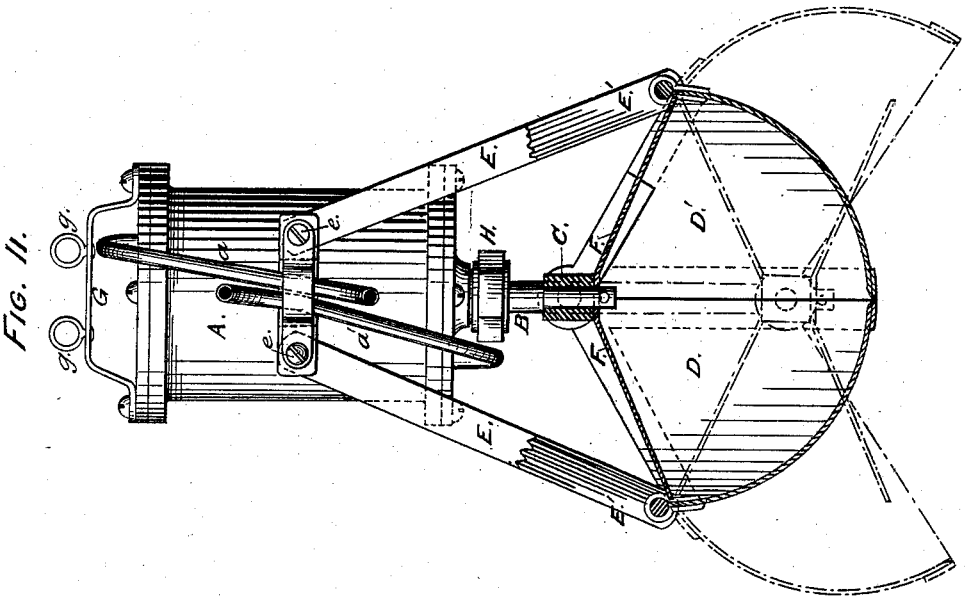



FIG. II.




WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN DREDGING-BUCKETS.

Specification forming part of Letters Patent No. **198,957**, dated January 8, 1878; application filed July 30, 1877.

*To all whom it may concern:*

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

My invention relates to dredging apparatus; and the object is to operate what is commonly called a "dredging bucket or grapple" by a hydraulic cylinder directly connected to the bucket or grapple.

The invention consists of a hydraulic cylinder with suitable inlet and outlet pipes, and whose piston-rod is directly attached to the dredging bucket or grapple, the outer ends of which are connected to the sides of the cylinder by suitable bars or levers.

It also consists in a diaphragm or clearer fitting the sides of the bucket, and being directly secured to the lower end of the piston-rod, by means of which diaphragm the bucket is cleared of any mud, dirt, &c., that may adhere to the sides of the bucket when it is desired to empty it of its contents, and the sand is also prevented from being washed out in raising the bucket, all of which will be more fully described in the following specification, reference being had to the accompanying drawings and letters of reference thereon.

In the accompanying drawings, Figure 1 is an end elevation of my improved dredging-bucket. Fig. 2 is a side elevation of the same, partly in section.

In the drawings, A represents a hydraulic cylinder, provided with inlet and outlet pipes *a a'*, by which the water is alternately admitted to the opposite sides of the piston. For opening the bucket the water passes through pipe *a*, and for closing the same it passes through pipe *a'*. These pipes *a a'* are suitably secured to rubber or other pipes leading to the surface of the water, and connected to suitable pumps, by which the bucket is operated.

To the lower end of the piston-rod B is attached a cross-head, C, having suitable projecting pins *c c'* on its outer ends, to which the two halves D D' of the bucket are hinged.

To the outer corners of the bucket are attached the double levers or bars E E' at one of their ends, while their other ends are pivoted to the sides of the cylinder, as shown at *e e*.

Immediately below the cross-head C is secured a diaphragm, F, which, as nearly as possible, fits the bucket-sections on sides and ends. This may be of any suitable material, and varied in thickness for different sizes of buckets. By this diaphragm the mud, dirt, &c., adhering to the bucket-sections is cleared out when the bucket is to be emptied of its contents. The sand, &c., is also prevented from being washed out of the bucket in raising it through the water.

To the upper side of the cylinder a cross-piece, G, is firmly secured, provided with two rings or eyes, *g g*, by which the whole apparatus is raised and lowered in the water.

Instead of the bucket-sections, the usual grapples may be attached, if desired, in a similar manner.

A stuffing-box, H, of the ordinary construction, keeps the piston-rod tight.

The great advantages of my invention are, that it is simple in its construction, very easily manipulated, not liable to get out of order, that great power or force can be exerted. The bucket can be entirely filled by repeated strokes of the piston without raising the bucket out of the water, and the bucket can be perfectly cleared of any adhering mud, &c., by means of the diaphragm when being emptied.

The sand, mud, &c., is also prevented from being washed out, when hoisting the bucket, by the diaphragm.

The whole apparatus can be made of any suitable material.

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

1. The method of operating dredging buckets or grapples by means of a hydraulic cylinder, substantially as and for the purpose herein set forth.

2. In dredging-buckets, a diaphragm, F, arranged substantially as shown, and for the purpose described.

3. The combination of a hydraulic cylinder, A, bucket-sections D D′, and levers E E′, arranged substantially as shown, and for the purpose described.

4. The combination of a hydraulic cylinder, A, bucket-sections D D′, levers E E′, crosshead C, and a diaphragm, F, all constructed and arranged substantially as shown and herein set forth.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

THOMAS SYMONDS.

Witnesses:
HENRY B. FISKE,
GEO. H. FOGG.