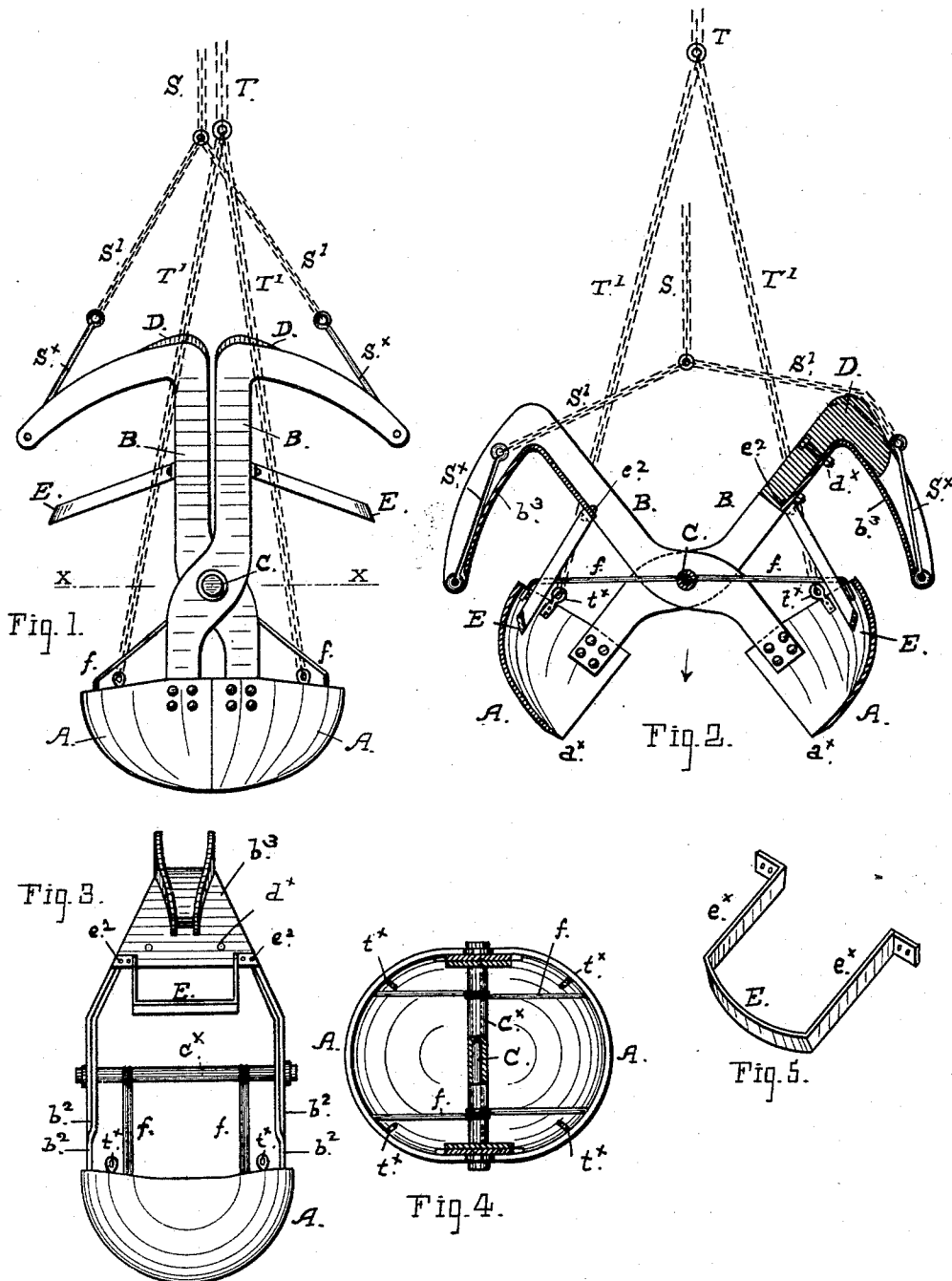


(No Model.)

J. HATCH.
DREDGING IMPLEMENT.

No. 485,193.

Patented Nov. 1, 1892.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN HATCH, OF SAN FRANCISCO, CALIFORNIA.

DREDGING IMPLEMENT.

SPECIFICATION forming part of Letters Patent No. 485,193, dated November 1, 1892

Application filed February 15, 1892. Serial No. 421,527. (No model.)

To all whom it may concern:

Be it known that I, JOHN HATCH, a citizen of the United States, residing in the city and county of San Francisco, and State of California, have invented certain new and useful Improvements in Dredging Implements, of which the following is a specification.

My invention relates to improvements in the construction of dredging implements of the class or description which are commonly called "clam-shell dredges."

The improvements constituting this invention consist of certain parts of novel construction, as hereinafter fully described, and shown in the accompanying drawings, and in the combination thereof with other well-known parts and devices, producing an improved implement for the purpose, all as hereinafter set forth.

The accompanying drawings illustrate said improvements and the manner in which I form, construct, and carry out the same.

Figure 1 is a front view of my improved dredge with its jaws closed. Fig. 2 is a longitudinal section having the jaws open. Fig. 3 is an end view taken from the right-hand side of Fig. 1, but with the chains and slings omitted. Fig. 4 is a horizontal cross-section taken through Fig. 1 at the line $x x$, and Fig. 5 is a detail view in perspective of one of the scrapers.

The scoops A A are fixed on the lower ends of two pairs of levers B B, that cross each other at points close to the scoops and are united by a pivot C, like a pair of tongs, so that by drawing together the upper ends of the levers the scoops are closed and form a bucket or receptacle, and by spreading apart the levers the two parts are separated and the load is discharged. The meeting edges of the scoops fit closely together and on the outer faces they are beveled to a cutting-edge across the bottom, as shown at a^* , Fig. 2. The two parts A A are so shaped that when closed together they form a bucket or receptacle oval in both vertical and horizontal projections, as seen in Figs. 1 and 4, but transversely or in cross-section the shape is about semi-circular, as seen in end view, Fig. 3. Above the pivot C the two arms or members $b^2 b^2$ of each lever are brought together and bent outwardly and downwardly in a curve, to which

curved end the hoisting-chain S' is attached by an eye bar or rod S* and chain. This construction is common to both levers, the two chains S' being connected by a ring with the hoisting-chain S over the middle of the buckets. Other chains T' T' are attached to the scoops by eyes t^x , riveted to the perpendicular sides of the scoops beyond the hinge or pivot, and are connected to a single chain T for the purpose of opening and spreading apart the sections both to discharge the load and to hold the sections in position for cutting into the mud on being lowered.

D D are metal blocks fixed on the upper ends of the levers at the knee or bend where each lever is turned outward and held by bolts d^x , as shown in Fig. 2. A cradle or rest is provided for the weight at this part of the lever by fixing between the two arms of the lever a web or plate b^3 , having the same curvature as the arms and filling the space between them from a point below the bend out to the point or extremity of the curved end. The weight is shaped to fit over the bend of this rest and to fill the space breadthwise between the arms. The block is secured by fastenings that allow it to be detached whenever it is desired to substitute another block of greater or less weight, by which the scoops can be counterbalanced and caused to separate and spread apart quickly as soon as the hoisting-chain S is slackened. These weights or counter-balances will also cause the cutting-edges of the scoops to engage more readily with a "hard bottom," as the weights will hold the scoops down to the work. The fastenings shown in Fig. 2, consisting of an ordinary bolt and nut, will answer well for this purpose. When the debris and mud is soft, however, these blocks or weights may be removed and the scoops operated without these blocks, the bolts affording means for adjusting them to the arms.

E E are scrapers curved to fit into the scoops at the outer ends or sides and fixed to the arms b^2 between the hinge-joint and the upper ends of the levers in such position that as the levers are spread apart the scraper on one lever is forced into the scoop carried by the opposite lever, or is thrown toward that scoop and against the body of mud it contains. Each lever has a scraper of this character fixed to

it by arms $e^x e^x$ of proper length to bring the bow or scraper close to the inner surface of the scoop, and the ends of these arms are turned outward and punched for bolts e^2 , by which they are fixed to the lower end of the plate b^3 , as shown in Figs. 2 and 3. These scrapers can be formed in one piece with the supporting-arms as represented in Fig. 5, and they can be detached for sharpening or for repairs when bent or broken.

The center C, on which the levers B open and close, is a long bolt with a tubular sleeve C^x between the arms of the levers to strengthen and stiffen the joint, and from the sleeve are carried braces ff to the longer sides or ends of the bucket for the purpose of distributing the weight of the scoops and the load upon the pivot instead of throwing all the strain upon the rivets where the lower ends of the levers are joined to the scoops.

In operating my improved dredge the scoops are spread and held apart in the descent against the bottom to be dredged by slackening the chain S and lower the implement by the chain T, in which position of the scoops the cutting-edges are set into the mud as the bottom is struck. In that position of the scoops the weights D are perpendicularly over the cutters, so that they act in the cutting operation to augment the weight of the scoops in the most favorable direction. By hauling on the chain S the scoops are closed tightly together and the dredge is raised to the sur-

face with its load of mud. The discharge of the load takes place when the power is applied to the chain T and the other chain is slackened, and at such time the weights D cause the levers B to throw over quickly and open the dredge. In addition to this the weight on one side of the pivot serves to counterbalance the scoop which is carried by the lower end of the same lever on the opposite side of the pivot, as will be evident from Fig. 2 of the drawings. In this view, however, only one weight or block is seen.

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

1. In a dredge of the character herein described, the scrapers E on the arms of levers that carry the scoops, placed for operation as set forth.

2. The herein-described dredging implement, consisting of the excavating-scoops having beveled cutting-edges a^x , the cross arms or levers B B, having outwardly-turned ends above the pivot, the scrapers E on the levers, and the hoisting and operating chains S T and slings $S' T'$, constructed and combined for operation as set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

JOHN HATCH. [L. S.]

Witnesses:

C. W. M. SMITH,
CHAS. E. KELLY.