

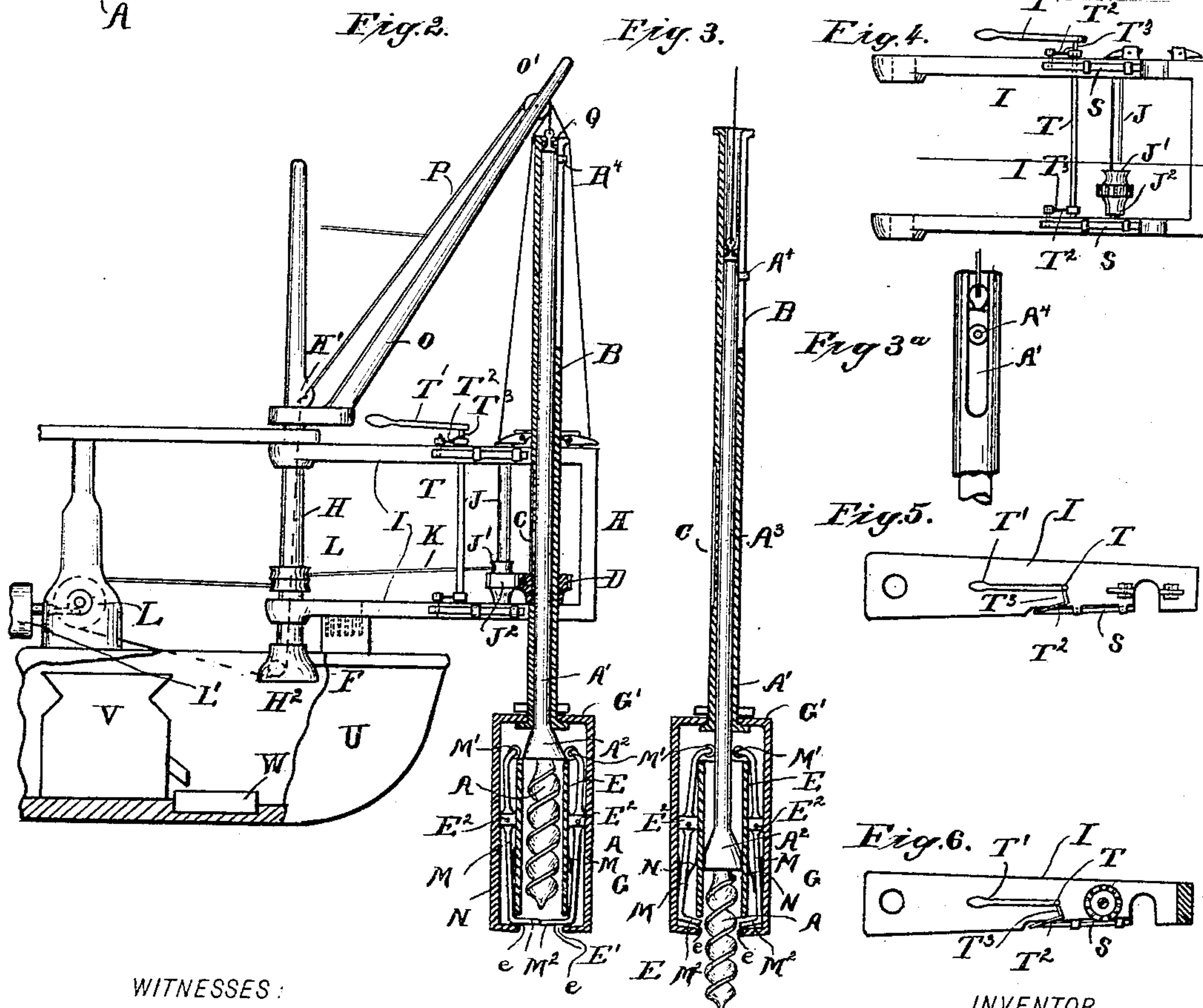
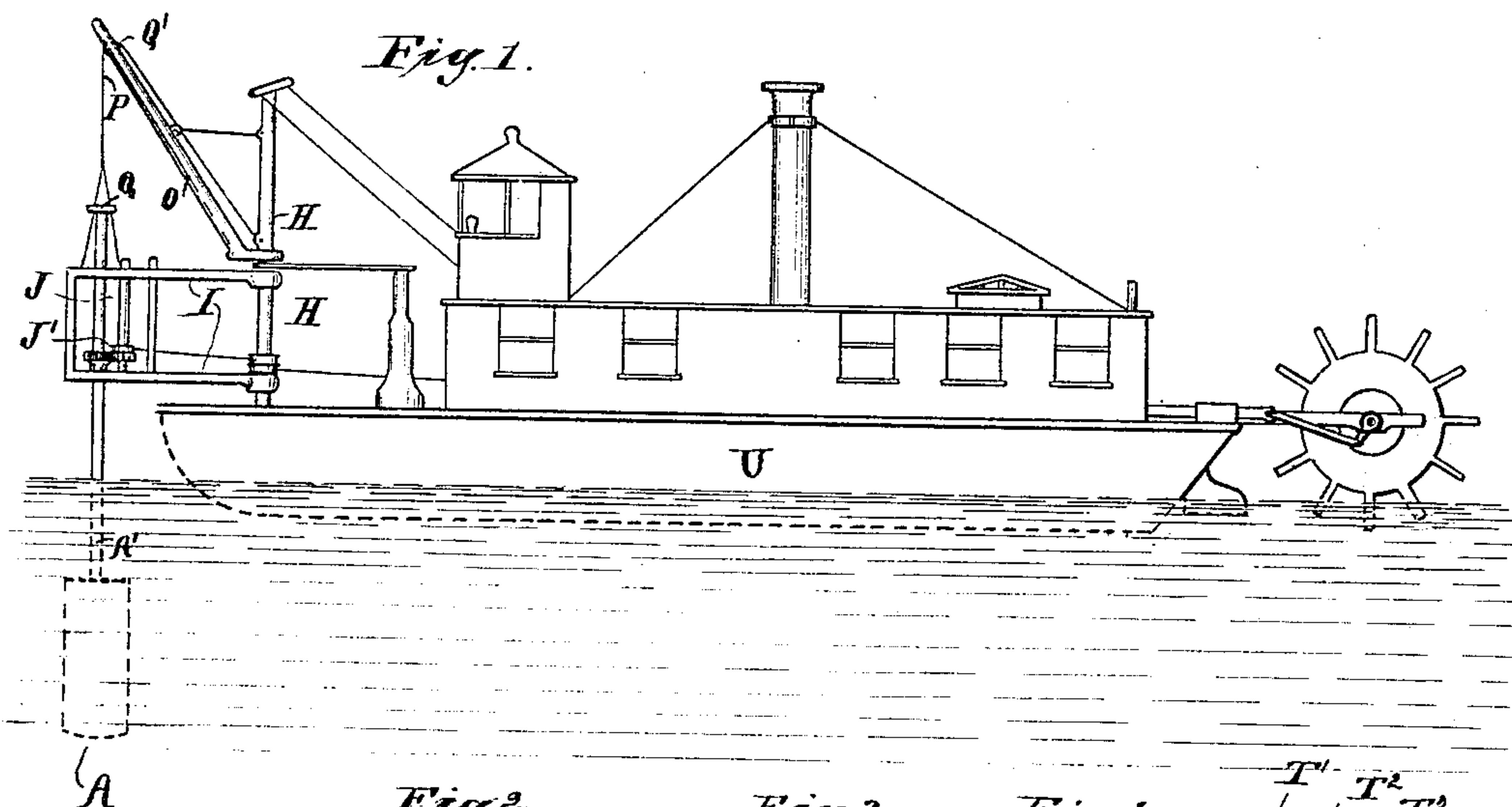
No. 618,332.

Patented Jan. 24, 1899.

C. L. CLOUDMAN.
POWER DREDGING MACHINE.

(Application filed Mar. 15, 1898.)

(No Model.)



WITNESSES:

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CHARLES L. CLOUDMAN, OF NORTH ADAMS, MASSACHUSETTS.

POWER DREDGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 618,332, dated January 24, 1899.

Application filed March 15, 1898. Serial No. 673,937. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. CLOUDMAN, a citizen of the United States, residing at North Adams, in the county of Berkshire, in the State of Massachusetts, have invented a certain new and Improved Power Dredging-Machine, of which the following is a specification.

My invention is more particularly intended for gold-mining in the beds of rivers, and I will describe it as thus applied.

I have made important improvements in the details of the mechanism which contribute to the efficiency of the apparatus and particularly to the rapidity with which it may be worked and the certainty with which the action may be concentrated on a required spot or closely associated series of points in the river-bed. The invention provides for insuring that the spoil shall be held reliably and dumped completely.

I use the term "spoil" in its generally-accepted sense to indicate the entire mass of earthy material in various degrees of fineness and saturation with water and the gold or other mineral matter in various degrees of fineness or of oxidation which are found in the bed of a river and raised by my auger.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a side elevation on a small scale. The remaining figures are on a larger scale. Fig. 2 is an elevation corresponding to Fig. 1, partly in vertical section. It shows the parts in the condition which they assume when they are to be lifted from the bed of the river to be discharged. Fig. 3 is a vertical section of a portion showing the parts in the condition which they will assume while boring in the river-bottom is being effected. Fig. 3^a is a modification of the shaft and sleeve construction. Fig. 4 shows a portion of the frame with the boring device removed. Fig. 5 is a corresponding plan view. Fig. 6 is a corresponding horizontal section on the line 6 6 in Fig. 4.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

A is a screw-borer adapted to be revolved in a vertical position and to loosen the earth

and lift it by its screw form. The screw-borer terminates at its upper end in a thick collar A², the upper side of which is conical. Above this cone the shaft A' is continued upward, as indicated by A³. This upper portion carries a radial pin A⁴, through which it receives revolving motion from a long exterior sleeve B, which has a long slot receiving this pin, and is also grooved longitudinally and is engaged by a feather C with a gear-wheel D.

E is a hollow inner cylinder open at both ends and concentrically inclosing the screw A. To the lower edge of the outer cylinder is joined an annular plate E'. The outer cylinder G extends upward, having its upper end closed by a head G', except for a sufficient aperture in the center, through which the shaft A' and sleeve B may pass. The lower end of the sleeve B is flanged outward and bears under the head G' of the outer cylinder.

At about the mid-height of the inner cylinder E are clamps E², in which are pivoted levers M, which perform important functions. The upper end of each carries a wheel M', which is adapted to be thrown outward by the cone A² when the latter is lifted. The lower end of each lever M carries a horizontal plate or slide M². Corresponding horizontal slots *e* are made in the inner cylinder E, near the lower end thereof, through which these slides M² may enter, the screw-borer, which I will briefly designate as "auger," having been raised out of the way.

N N are springs which urge the lower ends of the levers M outward and cause the wheels M' to press inward or together.

In the operation of the apparatus the auger and its accompanying parts described are lowered upon the bed of the stream in the condition shown in Fig. 3, the shovels or slides M² being open. Power is applied through the gear-wheel D to turn the sleeve B and through this to correspondingly revolve the inner shaft A³. The action of the connected auger causes it to descend into the river-bed and to elevate the spoil thereby detached. When it is judged that this has proceeded for a sufficient time to fill the auger, the latter is raised, lifting its contained spoil up into the inner cylinder E. In the latter part of this lifting motion the cone A² acts on the wheels M' and rocks the levers M in

opposition to the force of the springs N, thrusting the slides M^2 inward through the apertures e , practically imprisoning the contents of the cylinder E. Now by the further
 5 lifting motion of the parts the whole is raised through the water to be discharged into a suitable receiver, after which the water and other matters may be separated by ordinary treatment and the auger A and the adjacent
 10 parts may be again rapidly lowered to an immediately-adjacent portion of the river-bed, and the operation repeated.

H is a mast having capacity to be revolved in a supporting boat or scow.

15 I is a rigid framing supported on the mast and revolving therewith. This framing affords bearings for the vertical sleeve B and also for an adjacent shaft J, carrying a pulley J' , which receives motion through a belt K
 20 from a fly-wheel L of a steam-engine and communicating the motion through a gear-wheel J^2 to the gear-wheel D, before described.

O is a derrick pivoted on the mast immediately above the framing I and equipped
 25 with operating-ropes supported in the inclined position shown, having its upper end over the shaft A' . A rope or chain P, connected to a swivel Q in the top of the shaft A' , runs over a pulley O' in the top of the
 30 derrick, thence over a pulley H' , let into the mast, and thence down through the sufficient axial hole bored in the lower portion of the mast to a pulley H^2 at the step F, from
 35 whence it may be led to a clutch-windlass, by which the dredging parts may be raised and lowered at will.

One side of the framing I is deeply notched to receive the sleeve B and its contained parts.

40 S S are slides adapted to bolt or lock in the shaft at will.

T is an upright shaft adapted to be partially rotated horizontally by a hand-lever T' and carrying two arms $T^2 T^2$, connected by
 45 links $T^3 T^3$ to the slides S. This shaft T is turned in one direction to withdraw the slides when the auger and its connections have been raised and turned in the other direction to again lock the shaft into position for
 50 work after it has left the frame I, being swung laterally out of the notches and depending by the rope P alone, and has been emptied and returned.

The emptying of the load of spoil is effected
 55 by simply lowering the dredging parts so that one side thereof rests on the edge of the bin or scow in which it is to be placed, leaving the space under the center clear and allowing the auger and its load to descend. The commencement of the descending movement of
 60 the auger carries the cone A^2 out of its engagement with the wheels M' and allows the levers M to turn in obedience to the force of the springs N, and thus withdraws the slides
 65 and leaves the mass of spoil free to descend. As it is easy to get rid of the surplus water

afterward a hose may play upon the suspended parts while in this position to promptly remove all the earthy and mineral matter. The hoisting of the shaft A' and its
 70 connections again restores the parts to condition for working, and on reëngaging the sleeve B in the notches and relocking it by again turning the lever T' , and thus sliding the bolts S, the device is again ready to be
 75 lowered. As soon as the cylinders are supported on the bed of the river the descent of the auger therein by lowering the cone A^2 allows the slides to be drawn out, and the auger is ready to be again worked, and the
 80 operations are repeated.

L' is the cylinder of the engine which turns the fly-wheel L. The whole is carried on the frame I, and the whole frame may be turned
 85 a small amount by hand or by any suitable mechanism at each operation, so as to excavate a series of points in the river-bed describing a large arc of a circle.

Generally the sweep of the swinging boom will be such that the filled cylinder and its
 90 auger can be brought immediately over to discharge the spoil into a cradle V, operating in connection with a sluice-box W at one side of the barge U.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. The size of the
 95 auger and the proportions of the other parts may be varied within wide limits. There may be two or more of the pins A^4 on the
 100 shaft A' . Such pin or pins may carry rollers to reduce the friction when the shaft A' is raised and lowered within the sleeve B. Fig. 3^a shows such a modification.

Parts of the invention may be used without
 105 the whole. Other means than the slides S may be used for securing in its bearings the sleeve B and releasing it therefrom. The power may be supplied by an engine on the deck of the
 110 boat with proper connections therefrom.

The bottom E' or the outer cylinder G may have liberal openings to avoid any liability
 115 to retain spoil which may be sometimes thrown into it from the open top of the inner cylinder E.

I claim as my invention—

1. In a dredge for off-shore placers, the combination with a suitable barge, of a cylinder having bottom-closing slides pivotally supported, an auger vertically movable within
 120 and below said cylinder, a cone or body moved by the raising of the auger to close the plates, and means for independently vertically moving the cylinder and auger and for rotating the latter, substantially as herein specified. 125

2. In a dredge for off-shore placers, the combination with a suitable barge, of a cylinder having bottom-closing slides carried by vertical pivoted levers having wheels at their upper ends, an auger vertically movable within
 130 and below said cylinder, a cone or body moved by the raising of the auger to close the plates,

and means for independently vertically moving both the cylinder and auger and for rotating the latter, substantially as herein specified.

- 5 3. In a dredge for off-shore placers, the combination with a casing suspended by a vertical tubular shaft, and containing a cylinder E, movable plates or slides for closing the lower end of the latter, an auger within the
10 inner cylinder carried by a shaft within the tubular shaft but engaged therewith to slide within but rotate with the same, means for independently raising and lowering said inner and tubular shafts, and for rotating the latter,
15 and connections for closing the cylinder-plates upon the ascent of the auger substantially as herein specified.

4. In a dredge for off-shore placers, the combination with a barge or scow having a cradle and sluice-box, of a cylinder and auger movable within and below the same, cylinder-closing slides operable by the movement of the auger, and auger-rotating means and provision for vertically moving both the same and the cylinder and a boom for swinging
20 both to discharge to the cradle, substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

CHARLES L. CLOUDMAN.

Witnesses:

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GEORGE O. BERARD.