

(No Model.)

2 Sheets—Sheet 1.

W. H. DIESTELHORST.
DREDGER.

No. 546,586.

Patented Sept. 17, 1895.

Fig. 1.

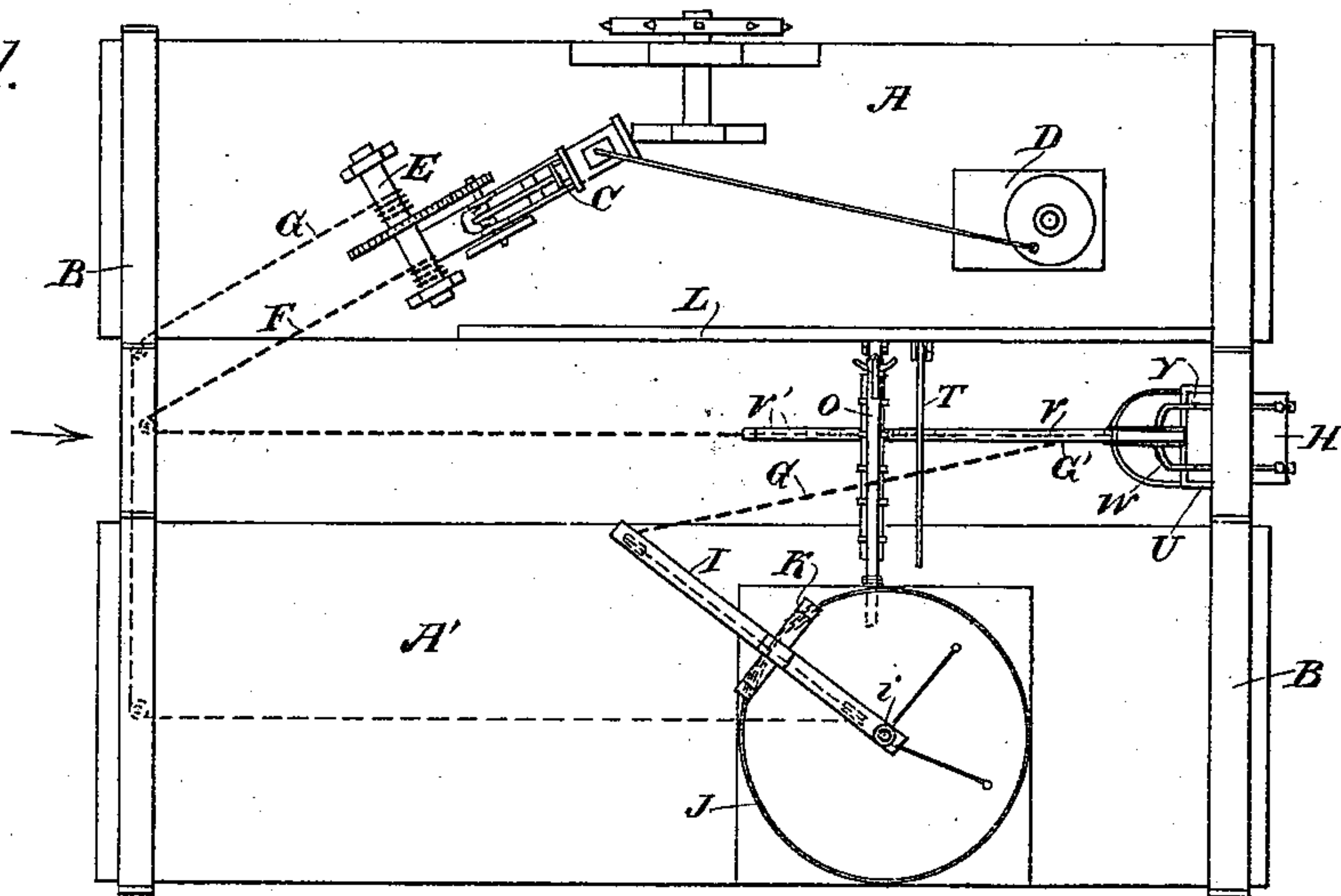
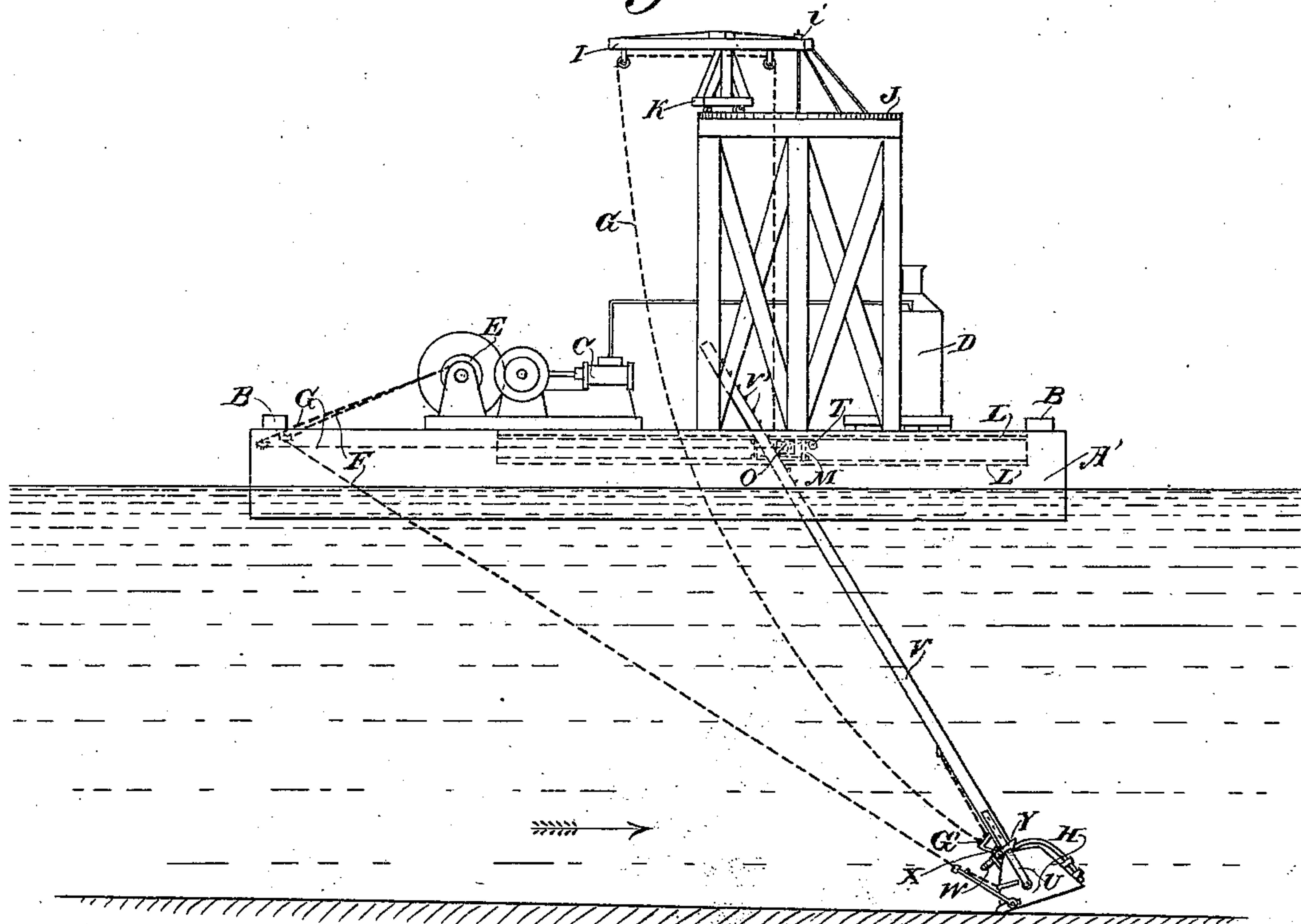


Fig. 2.



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Fig. 3.

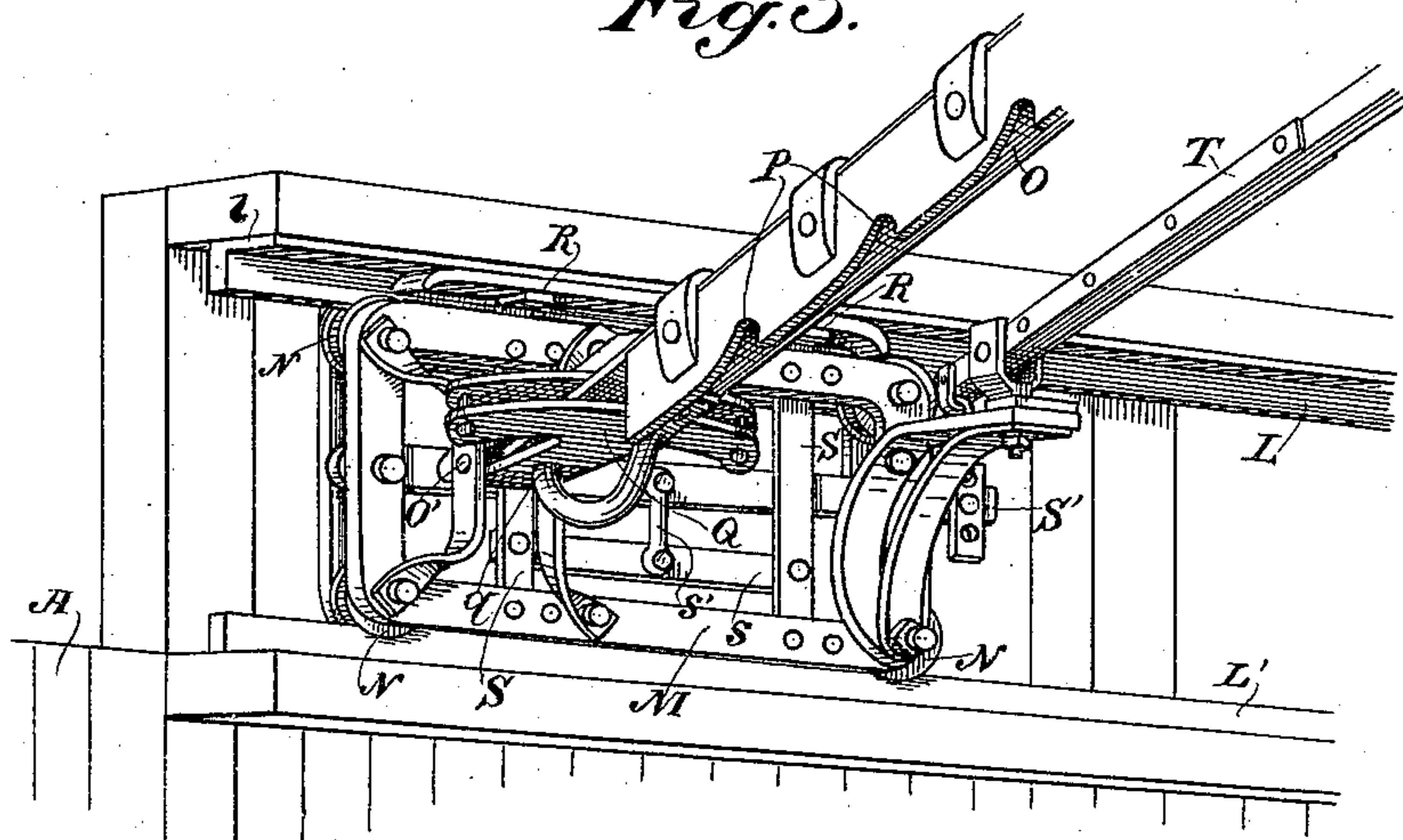
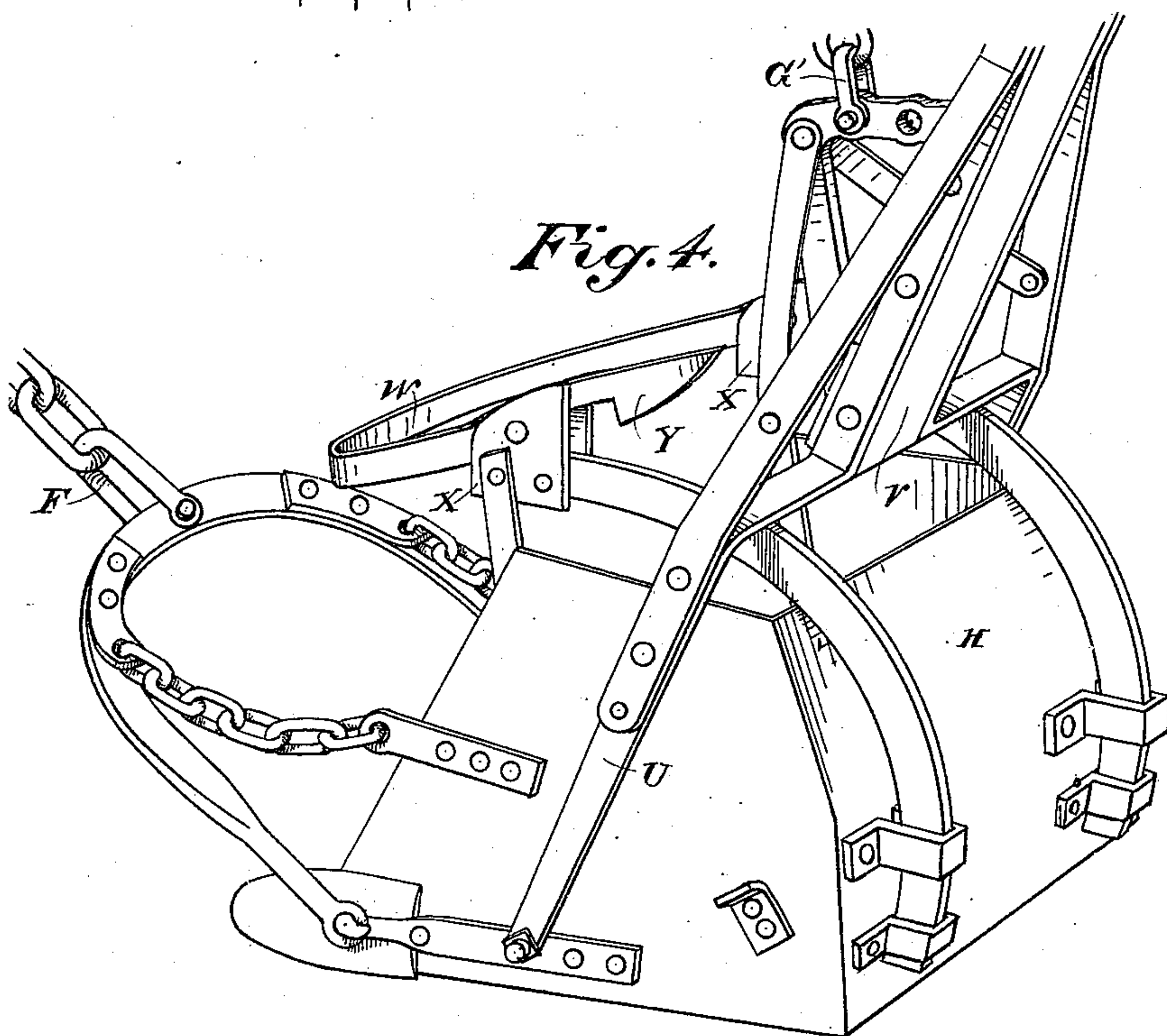


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM H. DIESTELHORST, OF REDDING, CALIFORNIA.

DREDGER.

SPECIFICATION forming part of Letters Patent No. 546,586, dated September 17, 1895.

Application filed February 27, 1895. Serial No. 539,921. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. DIESTELHORST, a citizen of the United States, residing at Redding, Shasta county, State of California, have invented an Improvement in Dredgers; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to a device for dredging in rivers or bodies of water; and it consists in certain details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a plan view showing the arrangement of the apparatus. Fig. 2 is a side elevation. Fig. 3 is an enlarged view of the traveler and guide. Fig. 4 is an enlarged view of the bucket and mechanism.

My invention is especially designed for dredging valuable auriferous and other metal-bearing gravel and sands from the bottom of streams and water-courses; but it is also applicable for other dredging purposes.

A A' are two boats or scows connected together by transverse timbers B, so that they remain essentially parallel with each other, with a space or channel between them. These boats or scows are anchored securely at a point where the work is to be done, and upon one of them is an engine C, with its boiler D and winding-drums E, around which pass the chains F and G. The chain F passes around a direction-pulley near one end of the apparatus, and leads thence centrally between the two scows to a point where it is connected with the front of the dredging-bucket H, drawing at a low angle. The other chain G is led around direction-pulleys in like manner and, passing along over the second boat, is connected through direction-pulleys with a derrick-arm I, and thence passes down to the framework or bail of the bucket H, to which it is connected, so that the bucket may be lifted when loaded.

The derrick I consists, in the present case, of a horizontal beam or timber properly trussed and strengthened and having one end fulcrumed to swivel in the center of an elevated framework, having upon it a circular track J. Upon this track a truck K is fitted to travel, and the derrick-beam I is supported from this truck at a point sufficiently distant from the inner swiveling end, while the outer end pro-

jects, so that it may be brought in line above the bucket when it is desired to raise the latter.

Upon one of the boats tracks or guides L and L' are fixed, one above the other, extending horizontally along the inner side of the boat.

M is a stout framework or carriage of iron, having pulleys N, journaled in its angles and adapted to travel upon the guides L L'. From this framework a strong lever-arm O extends across the space between the two boats, its outer end projecting over the second boat and the inner end being fulcrumed to guide-plate Q at q, the latter being fulcrumed at O' to the frame M, which allows the lever a vertical movement about the pivot O' and a horizontal one about the pivot q. Upon one side of this lever are teeth or ratchet notches P for a purpose to be hereinafter described.

Upon the framework M are the brakes R, which are adapted to clamp upon a horizontal flange l on the track L, so as to lock the carriage firmly in any desired position with relation to the boats. These brakes R are actuated by compound levers S, connected by a cross-piece s, connecting-link s' to the brake-lever S', the latter being operated by a hand-lever T, which extends across the space between the boats and is operated from the one opposite to that which carries the guide-rails and framework.

The bucket H is made of stout steel plates of sufficient strength for the purpose for which it is to be used, and it is swiveled between the arms of a yoke U, as shown. This yoke is fixed to a long timber or handle V, the length of this handle being sufficient to allow it to project above the surface of the water between the boats when the bucket is at the bottom in position to work. Upon this handle V are formed ratchet teeth or notches V', which correspond with the teeth or notches P upon the lever O.

The operation will then be as follows: The bucket H and its lever-arm V are suspended by the chain G, which is attached in any suitable or convenient manner, as shown at G', and the bucket being let down, it rests upon the bottom with the front digging-edge in position to be forced into the material which forms the bottom of the river. The handle V

will incline forward, as shown in Fig. 2. The carriage or framework is moved along the track L L' until the handle stands at a proper angle with relation to the bottom or bed of the stream, and the carriage is then locked by pressing down upon the lever T, which applies the brakes R R with sufficient power to hold the carriage in its position. The lever O is then moved, with its teeth P, into contact with the teeth V' of the handle V of the bucket, and it is then drawn down upon the opposite float or scow and secured by one or two turns of rope or chain, or in any other suitable manner, so that it forms a rigid connection between the two boats, and the handle of the bucket connects with this bar at a point between the two boats and is movable about it, the two sets of teeth forming a flexible fulcrum, about which the handle may be moved. Other forms may be employed for this fulcrum, the object being to form a temporary fulcrum adjustable with relation to the varying depths in which the bucket is to operate, and which will serve to hold the lever-arm while the bucket is being forced into the material and to afterward release it, so that it can be raised. These details being adjusted, the bucket-handle V, standing at the desired angle, and the parts being locked, as before described, power is applied to the chain F, which is attached to the front of the bucket, and the latter is then drawn forward and in the arc of a circle, which will force it into the material forming the bed of the stream, no matter how hard or tenacious it may be, with the exception of absolutely solid rock. The dredge will dig up gravel and boulders of considerable size by reason of the force brought upon it to cause it to move in the segment of a circle, and it will thus be filled with the material. If there is a bank or elevation in front, the bucket is forced into it to be filled.

In order to hold the bucket in proper relation to the handle and the bail by which it is drawn forward, I have shown a yoke W, fulcrumed to lugs X upon the upper front portion of the bucket and having a hook-shaped formation Y at the rear ends of the yoke. These hooks drop down behind the yoke or bail U when the handle V has been brought up to the proper position with relation to the bucket, and the yoke or bail U is then locked between the lugs X and Y, thus holding it in position while the load is being taken from the bottom of the river. After the bucket has been dragged through the arc which loads it, it is then ready to be lifted, and power being applied through the other chain G and the derrick I, the bucket is lifted to the surface after the handle V has been released from the holding-lever O, this release being effected by disengaging the fastenings of the lever O and moving it slightly backward in the guides Q until the teeth are disengaged, thus leaving the bucket and its handle free to be lifted up by the derrick-chain. When the bucket

arrives at the surface, it is dumped by simply turning the yoke W about its fulcrum-pins until the lugs Y are disengaged from the bail U, when the bucket will discharge its load at any desired point. The point of discharge is reached by means of the derrick I, which, traveling about the circular track J, is easily turned to any desired point of discharge either upon one of the boats A A' or upon some other receptacle situated at one side of the boat which carries the derrick, after which the device may be returned to its position between the two boats and again lowered for another load.

It will be seen that by means of the guides or tracks the frame or truck from which the bucket-handle is supported may be moved to any other desired point within the length of the boats, and thus all the work desired may be accomplished within this distance before the position of the boats is changed. When this space has been worked out, the boats can be moved to another section and the work again resumed.

The movement of the bucket-handle allows the bucket to change its direction to avoid rocks and obstructions or enter cavities not exactly in its direct course. The low draft from the front keeps the bucket down to its work, and the broad base for the derrick prevents tilting by the weight lifted.

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

1. A device for dredging and raising material from beneath the surface of the water, consisting of anchored floats connected together with an open space between them, longitudinal guides or tracks extending parallel with the space, a frame or carriage movable upon said guides, and means for locking it at any desired position, a bucket with means for suspending, raising and lowering it, said bucket having a handle, to the lower end of which it is swiveled, a lever extending from the truck or carriage across the open space, means for connecting the handle with said lever so that it forms a fulcrum about which the handle is movable, and a chain or connection with the front of the bucket whereby it may be drawn forward about the fulcrum upon which the handle turns.

2. A dredging apparatus consisting of anchored floats connected together with a space or channel between them, an engine or source of power mounted upon one of said floats, a traveling derrick mounted upon the other, a bucket or scoop having a handle with a bail at the lower end to which the bucket is swiveled, a rope or chain with direction pulleys over which it extends from the winding drum upon the engine to the derrick from which the bucket is suspended, a second rope or chain extending from a winding drum of the engine around direction pulleys and connected with the front of the bucket, whereby the latter may be drawn forward, a car or

frame traveling upon horizontal guides upon one of the floats, a brake or locking mechanism whereby it may be fixed at any point on the track with relation to the position of the
 5 bucket and the angle of its handle, a lever or mechanism connected with the movable car extending across the space between the boats and devices by which the handle of the bucket is temporarily fulcrumed to said lever so that
 10 when the bucket is drawn forward it will describe the arc of a circle and be forced into the material in the bed of the stream to receive its load.

3. A device for dredging from the bottom
 15 of streams, consisting of a bucket swiveled in a yoke at the lower end of a handle, anchored floats secured together in parallel lines with an open space between them, a movable derrick fixed upon one of the floats having
 20 an arm and a chain by which the bucket is suspended and raised or lowered, a latch device by which the bucket is temporarily locked with relation to the handle, a horizontally movable carriage traveling upon guides upon
 25 one of the floats having an arm extending therefrom across the space between them, with means upon said arm and upon the bucket handle whereby the latter may be temporarily fulcrumed to the arm to form a point
 30 of support about which the bucket is movable, a brake mechanism by which the carriage is locked in position when the bucket handle stands at the proper angle with relation to the bucket after the latter has been lowered
 35 to the surface where it is to dig, and a chain connected with a bail at the front of the bucket extending around direction pulleys, a winding drum and means for applying power thereto whereby the bucket is forced into the
 40 material and caused to travel in an arc of a circle so as to become loaded, means for disengaging the bucket handle from the lever arm whereby the bucket may be raised with its load, and a derrick and suspending chain
 45 connecting with the bucket and with a winding drum for raising the bucket.

4. In a dredging apparatus, an open front bucket or scoop, a bail or yoke between the ends of which the lower side of the bucket is

swiveled, a beam or handle to which the bail is
 50 rigidly fixed, and by which the bucket is held down to its work, lugs on the upper front portion of the bucket, a yoke fulcrumed between its ends to said lugs, having a hook-shaped formation at its rear end adapted to drop behind
 55 the yoke or bail when the handle is brought to its proper position whereby the upper part of the bucket and the bail are locked or disengaged.

5. In a dredging apparatus, an open front
 60 bucket or scoop, a bail or yoke between the ends of which the lower side of the bucket is swiveled, a beam or handle to which the upper portion of the bail or yoke is rigidly fixed, a centrally fulcrumed bail near the upper portion of the bucket having a hook formation
 65 at its rear by which the upper portion of the bucket is engaged with the bail while being loaded, and disengaged to discharge, a mechanism comprising a car or frame traveling
 70 upon the float, and inter-engaging devices between the car or frame and the handle adapted to lock the latter, and form a fulcrum about which the bucket is movable while loading, and a bail connected with the bucket front
 75 having attachments for a draft chain.

6. In a dredging apparatus, an open front bucket or scoop, a bail or yoke between the ends of which the lower side of the bucket is
 80 swiveled, a beam or handle to which the bail is rigidly fixed, a mechanism comprising a movable car or frame on the float and inter-engaging devices between the same and the beam or handle adapted to lock the upper end of the handle and form a fulcrum about which
 85 the bucket is movable while loading, a latch by which the bucket is engaged with the bail while being loaded, and disengaged to discharge, a second bail connected with the bucket front with attachments for a draft
 90 chain.

In witness whereof I have hereunto set my hand.

WILLIAM H. DIESTELHORST.

Witnesses:

S. H. NOURSE,
 H. F. ASCHECK.