

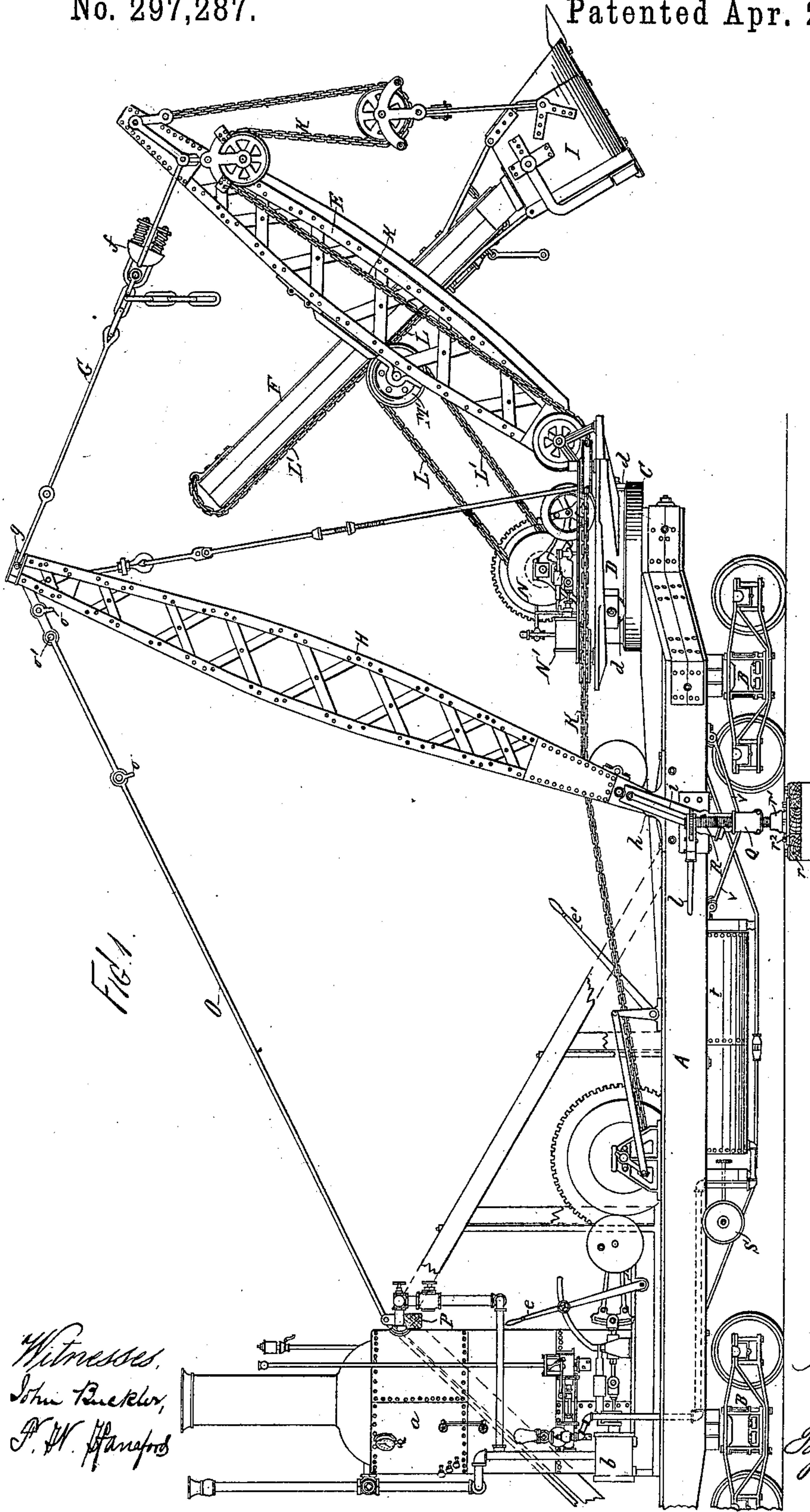
(No Model.)

3 Sheets—Sheet 1.

R. R. OSGOOD.
EXCAVATOR AND DREDGE.

No. 297,287.

Patented Apr. 22, 1884.



Witnesses,
John Buckler,
P. W. Hanson

Ralph R. Osgood,
Inventor
By Horace C. Osgood,
Attorney

(No Model.)

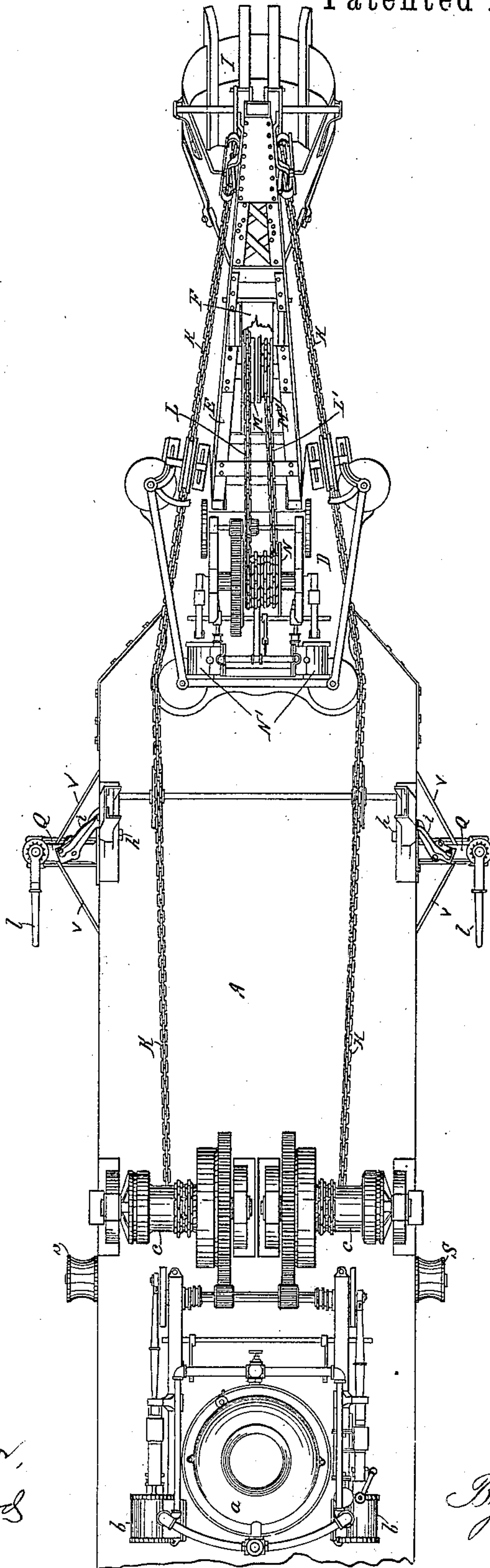
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FIG. 2.



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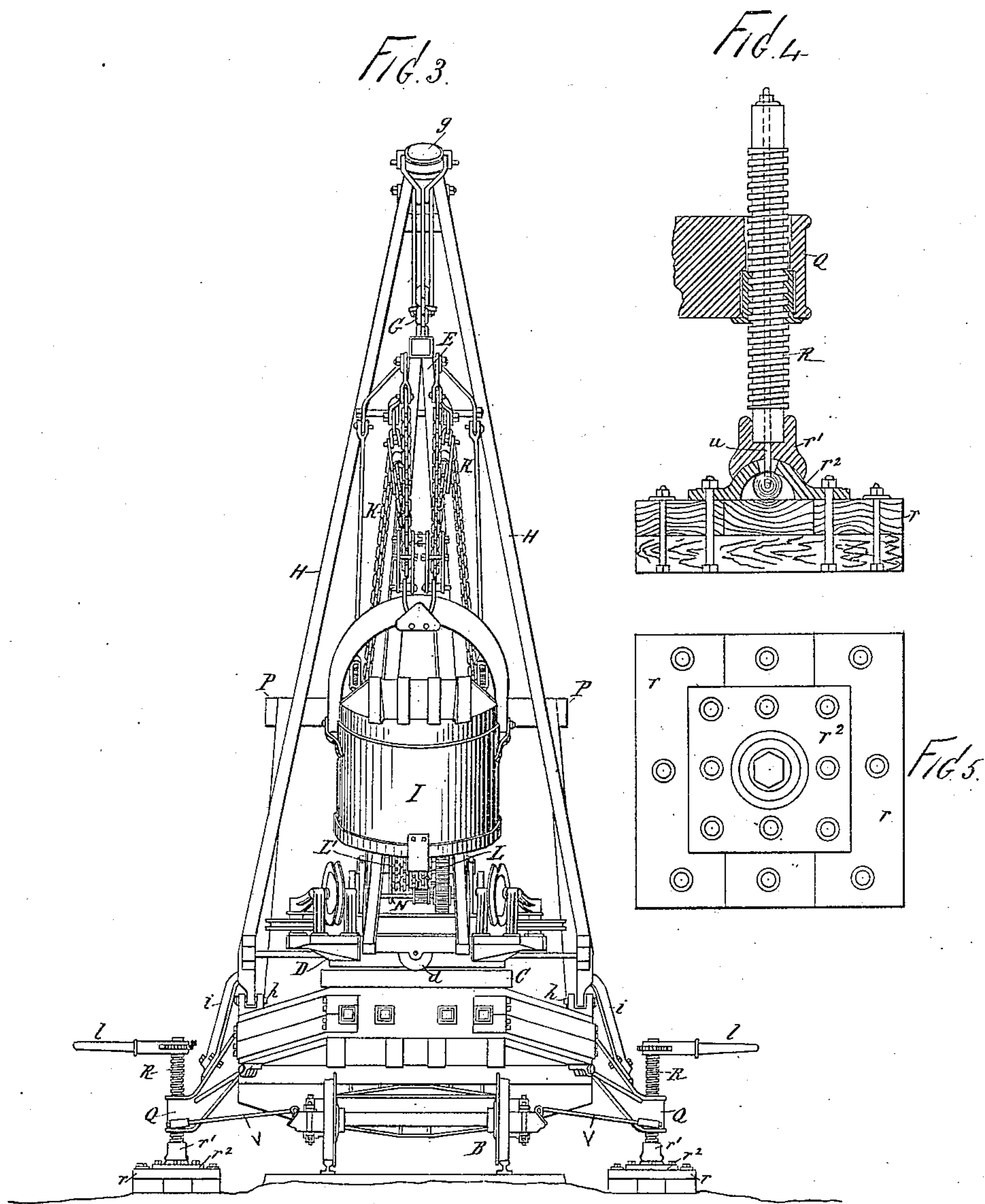
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UNITED STATES PATENT OFFICE.

RALPH R. OSGOOD, OF ALBANY, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE OSGOOD DREDGE COMPANY, OF SAME PLACE.

EXCAVATOR AND DREDGE.

SPECIFICATION forming part of Letters Patent No. 297,287, dated April 22, 1884.

Application filed February 14, 1883. (No model.)

To all whom it may concern:

Be it known that I, RALPH R. OSGOOD, of Albany, county of Albany, and State of New York, have invented certain new and useful
5 Improvements in Excavators and Dredges, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

10 My invention has relation to machinery or apparatus for land or under water excavating purposes, such as are usually called "excavators" or "dredges;" and among the objects of
15 my invention are the provision of powerful, certain, and readily-moving means for thrusting, holding, and backing the dipper-handle to which the scoop or dipper is applied; the mounting of the turn-table upon friction-wheels calculated to support it in a solid and
20 substantial manner, and yet permit it to travel easily and with little friction, as required during the swinging movements of the dipper or load; the hinging of the A-frame at its base in such a manner that it may be readily lowered
25 and raised and easily mounted for use; the provision of side jacks, by which the machine may be steadied while at work, relieving the forward parts of considerable strain, and connected with the body of the machine by ap-
30 pliances arranged to transmit the strain to the foundation of the jacks in the general direction of the principal parts of the A-frame; and, generally, the arranging of the principal parts of the machine in such manner as to se-
35 cure convenience, durability, facility of shifting and locating, rapidity of movements in taking and delivering the load, and effective and economical working capabilities in either hard or soft material. To accomplish these
40 objects, and otherwise to adapt the machine for the purposes or uses intended, my improvements involve certain novel and useful arrangements or combinations of parts, principles of operation, and peculiarities of construction, all of which will be herein first fully de-
45 scribed, and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation, showing my improvements as applied up-

on the excavator. Fig. 2 is a plan or top view 50 of the excavator shown in Fig. 1, the A-frame being cut off near its base; and Fig. 3 is an end elevation looking toward the machine from the front of the dipper, the dipper being a little more elevated than in previous figures. 55 Fig. 4 is a sectional elevation on a scale larger than previous figures, showing the construction and arrangement of the foundations for the jack-screws and the means of connecting the jack-screws therewith; and Fig. 5 is a plan 60 or top view of the same foundation.

In all these figures like letters of reference, wherever they occur, indicate corresponding parts.

A represents the body of a car or other plat- 65 form upon which the machinery is mounted. This platform is shown as supported upon ordinary railway trucks, as at B B; but it should be understood that the car-body shown in the drawings may be replaced by a boat or scow, 70 (so that the machine may be floated upon the water,) or it may be replaced by any other suitable platform.

C is the foundation for the turn-table, securely fastened to the platform; and D is the turn- 75 table mounted and made movable thereon, (about a central axis,) and carrying the boom E, which is hinged at its base upon the turn-table, and which supports the dipper-handle F. The other end of the boom is sustained at 80 any desired elevation by the boom chain or rod G, connected with the top of the A-frame H H.

At I is the dipper, which receives the load of material to be moved. It is securely fast- 85 ened upon the end of the dipper-handle, and is drawn into the bank and elevated by the hoisting-chains K K. A single chain might be used.

To thrust the dipper forward or draw it 90 back or hold it while the hoisting-chain is performing its work, I employ a dipper-handle chain or cable. (Represented at L L'.) One end of the chain or cable is securely attached at or near the outer end of the dipper-handle; thence 95 it leads over a suitable sheave, as M, applied upon the boom, thence down and to its connection with drum N. The other part, L', of

the chain is connected with the drum N, thence leads back over a separate sheave, as M', and then the end of this part is connected at or near the other end of the dipper-handle. The drum N is driven by an engine, N', mounted upon and movable with the turn-table, so that as the dipper is swung or moved the engine and drum always occupy the same relative position with respect to the lead of the chain L L', and thus all crowding or side straining is avoided. By turning the drum in one direction the dipper-handle and attached dipper are thrust forward, and by turning it in the opposite direction the reverse movement takes place. By arresting the movement of the drum, the dipper-handle is securely held against longitudinal movement, and thus the dipper-handle may be effectually and powerfully controlled with little exertion on the part of the operator, who has only to control the engine. By placing the engine and drum on the turn-table, the dipper may also be moved very rapidly, no matter how far to one side of the machine it may be swung or turned. By mounting the engine and drum directly on the turn-table, the dipper-handle can be better controlled and much gearing dispensed with and cramping and friction of parts avoided. One part of the dipper-handle chain winds upon drum N while the other part unwinds. Instead of making this chain in two parts, it might be made in one; but the two parts are preferred.

The turn-table D is capable of a horizontal revolving movement upon its foundation C, so that the boom and dipper-handle may be swung from side to side. The swinging is accomplished in the form shown in the drawings by the hoisting-chains, which are guided by suitable sheaves upon the turn-table. By pulling on one chain, at the same time slackening the other, the turn-table is moved around. This swinging movement might be otherwise accomplished; but in any case I provide the turn-table with three or more friction-rollers, *d d d*. These rollers are securely axled in the margin of the turn-table, and they run upon the slightly-inclined upper surface of the foundation, which forms an annular track for the rollers. The rollers are slightly beveled or made cone-shaped, so as to run truly and without crowding. They sustain pretty much all of the weight upon the turn-table, and in case of a strain thereon transmit it uniformly to the margin of the support. They are located outside of the turn-table, where they are easily accessible for repairs and for lubricating purposes, and so that the track upon which they run may be easily kept clear of the accumulation of foreign matters. It will be observed that the turn-table is thus provided with a very wide base, whereby the stability of the machine is enhanced and the parts connected with the turn-table are made to swing or move easily and with little liability of breakage, clogging, or other accident.

The two branches H H of the A-frame extend down to the platform and are hinged thereon, as at *h h*.

The hinge-plates are made solid and strong and are securely bolted in place upon the platform.

The upper end of the A-frame is sustained by guy rods or chains, as O, (generally two,) running back to a gallows-frame, P, and then carried down to the end of the platform and secured by anchor-plates in any approved manner.

To lower the A-frame, it will be found convenient to apply a tackle at the upper end of the guy rods or chains between the clevises *o o*, draw up sufficiently to allow the pin *o'* to be released, and then lower away with the tackle. The lowering might be accomplished by other means.

The hinging of the A-frame is an important feature, not only on account of the facility afforded for inclining and setting it at any desired angle, (for work,) but also because of the facility with which it enables one to lower it completely to pass under obstructions—such as bridges, &c.—and in an excavator built upon car-trucks it is of marked advantage, because it enables the machine to be readily coupled into a train of cars for transportation along a railroad without the necessity of dismounting the machinery. To do this the dipper and boom are lowered, so as to rest on any ordinary car in front, and then the A-frame also lowered to rest upon the same. In this way the machine is transported, and when arrived at destination is made ready for work in a few moments by simply elevating the A-frame, which may be readily done by use of the main engines on board. In the case of a dredging or floating machine, these same parts may be lowered and carried in the lowered position upon a scow in front; or, if not required to be dropped too far down, the scow may be dispensed with.

At each side of the platform are jack-stay arms, Q Q, rigidly secured in place and located in the region of the hinge-plates, which sustain the bases of the A-frame. These arms Q, with their diagonal bracing-rods V V, project from the body of the platform. Through the outer ends of the arms pass the powerful screws R R, which may be turned by the ratchet-levers *l l*, or by any other convenient means.

At *r r* are the bed-plates for the jack-screws of sufficient size to give an unyielding foundation, and preferably made of crossed timbers, as indicated. The bases *r' r'* of the screws R R are enlarged, and rest upon cap-plates, as *r²*, secured to the bed-plates. The screws R are perforated to receive a rod, *u*, having a ball or enlargement at one end, which bears upon the under surface of the cap-plate, and a nut at the other end, which bears upon the top of the screw. This connects the foundation or bed-plate with the screw, so that when

the latter is turned up it elevates the bed-plate and carries it with the screw always in position to rest upon the ground when the screw is turned down. The bases of the A-frame are connected with the jack-stay arms by an inclined brace, *i*, bolted to place in any proper manner. These braces are inclined in the same general direction as the inclination of the sides of the A-frame, and by thus inclining them the strain upon the sides of the A-frame are transmitted down to the ground through the bed-plates of the jack-screws more directly than would otherwise occur, and the general foundation of the machine is much widened (affording greater stability) when the screws are properly adjusted. When the A-frame is to be lowered upon its hinges, these inclined braces are to be first unbolted.

The machine being at the bank for work, the jack-screws are turned so as to relieve the trucks of as much strain as may be necessary, according to the character of the work to be done, and they transmit the working strain directly to the bed-plates, holding the machine steady and secure against rocking.

S S are capstans on each side of the platform, turned by the main engines, and employed principally for moving cars or scows up along side of the machine.

At *a* is the boiler, *b b* the main engines, *c c* the hoisting-drums, and *t* the water-tank. The boiler is supplied with all the usual adjuncts, and hand-levers, as at *e e'*, are placed at convenient points for controlling the main engines and drums. The extreme rear end of the platform is broken away in the drawings; but the lead of the A-frame guy-rods is sufficiently indicated. Of course the platform may be of any desired size.

At *f* is a spring which relieves the A-frame and all parts of the machine which are strained by the hoisting-chain from shock, and at *g* is a swivel-head block for the A-frame, upon which I have heretofore made application for patent.

When constructed and arranged for operation in accordance with the foregoing explanations, the machines have been found in practice to be easily moved and operated, little liable to damage or breakage, affording quick and economical working properties, and to admirably answer all the purposes and objects of the invention, as previously set forth.

I am aware that it has heretofore been proposed to apply a direct-acting engine or hydraulic piston in connection with the dipper-handle of a dredging-machine in order to move and hold the same; and I do not, there-

fore, desire to be understood as making any claim to such an arrangement. 60

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

1. In a dredging or excavating machine, the combination of a main engine with its adjuncts, a hoisting-drum with operative connecting mechanism, a turn-table having mounted thereon an independent engine and a drum for a dipper-thrusting chain, a boom supporting a dipper-handle carrying a dipper, a hoisting-cable, and an A-frame with connecting means leading to the boom, substantially as described. 65 70

2. In a machine of the class described, the combination, with a turn-table having mounted thereon a driving-engine and a drum operated directly by said engine, of the boom provided with the intermediate sheaves M M', and dipper-handle, with the chains L L' passing over and around the said sheaves and drum, the combination and mode of operation being substantially as described. 75 80

3. In a machine of the character herein set forth, having an A-frame for sustaining the boom, the combination, with the platform, of the side arms for receiving the jack-screws, and the inclined braces connecting the A-frame and the side arms, substantially as and for the purposes set forth. 85

4. The combination, as before set forth, of the platform, the A-frame mounted thereon, the side arms connected with the platform at or near the bases of the A-frame, the inclined braces connecting the A-frame and side arms, and the jack-screws passing through the outer ends of said arms, substantially as and for the purposes explained. 90 95

5. The combination of the jack-screw mounted in the side arm, the broad foundation therefor, provided with a suitable cap, and the connecting-rod passing through the body of the screw and secured at top and bottom, substantially as shown and described. 100

6. In a machine of the class described, the combination, with the body of the machine, having side arms through which are passed jack-screws, of the A-frame, having bracing-rods connected to the jack-stay arms, substantially as described. 105

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses. 110

RALPH R. OSGOOD.

Witnesses:

JOHN BUCKLER,
WORTH OSGOOD.