

No. 810,710.

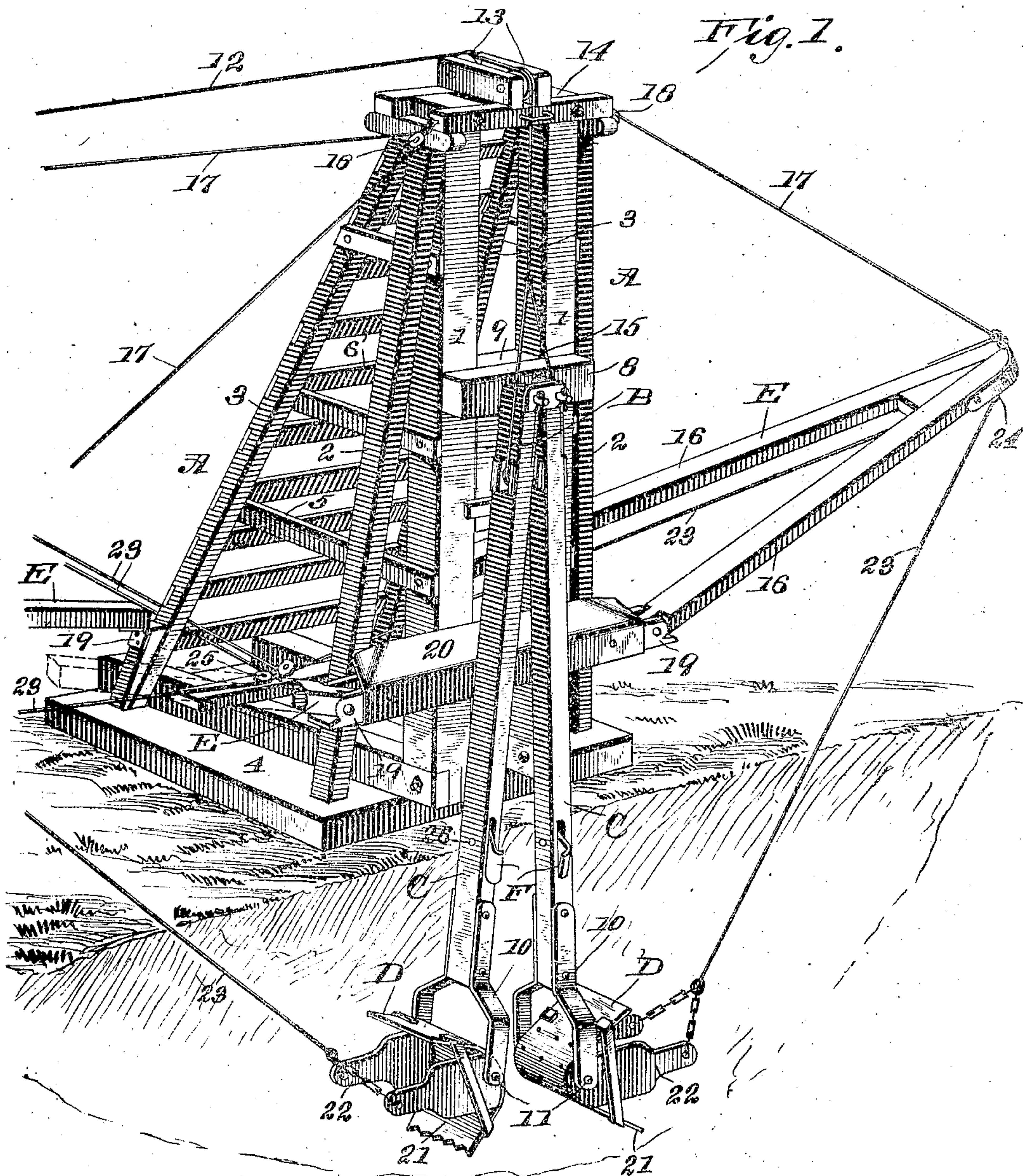
PATENTED JAN. 23, 1906.

A. J. BURCHAM.

DREDGE.

APPLICATION FILED OCT. 30, 1905.

3 SHEETS—SHEET 1.



WITNESSES:  
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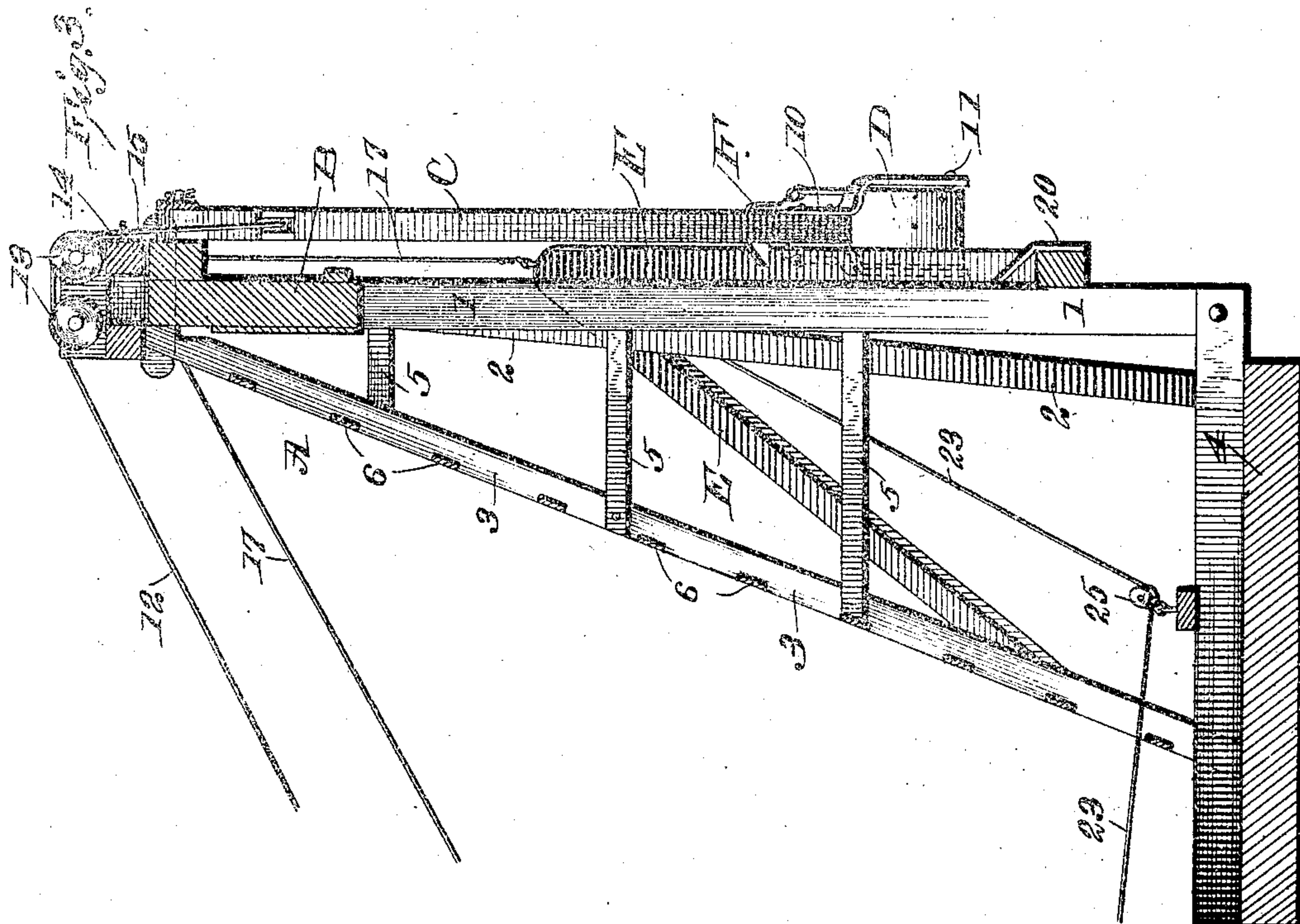
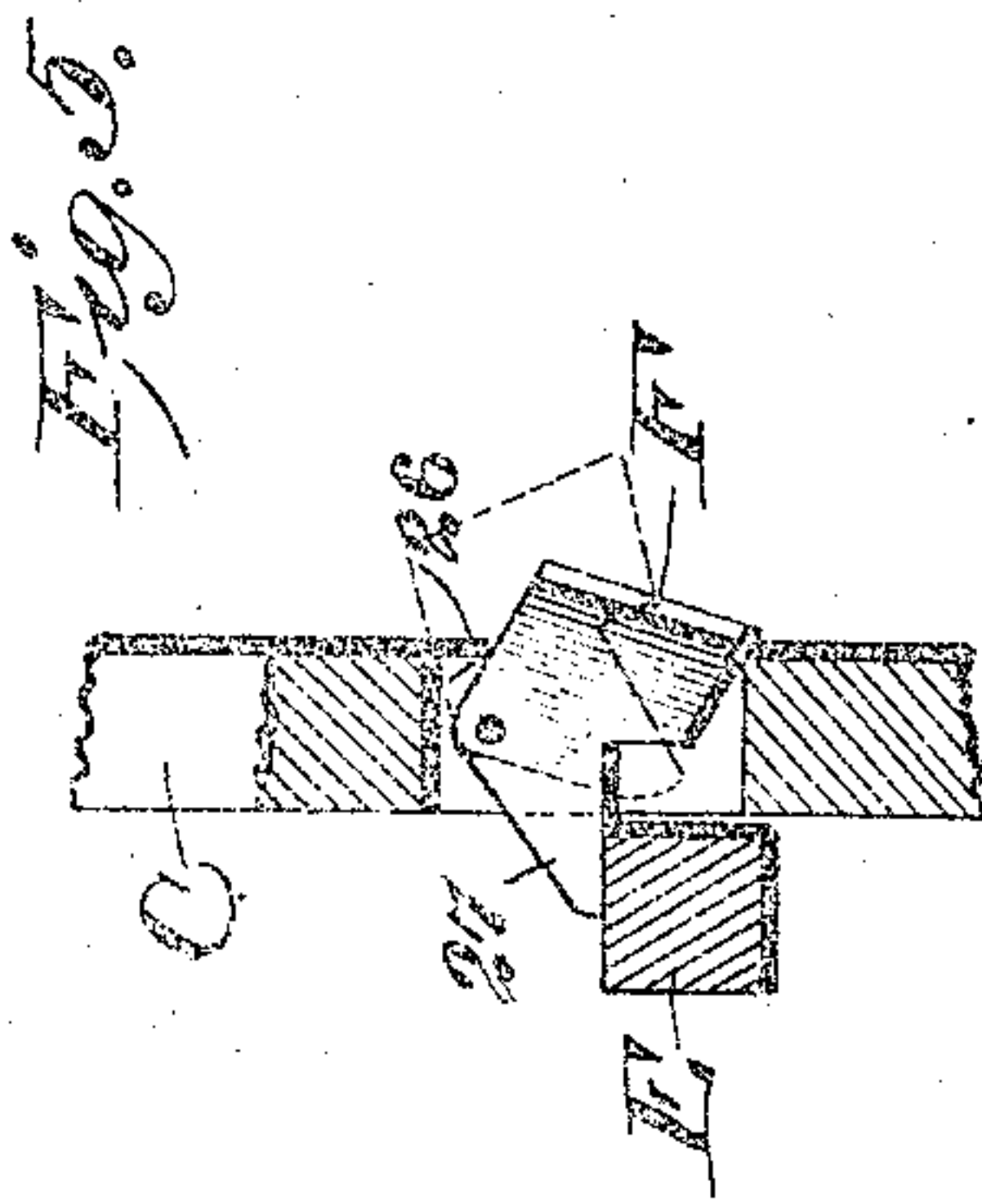
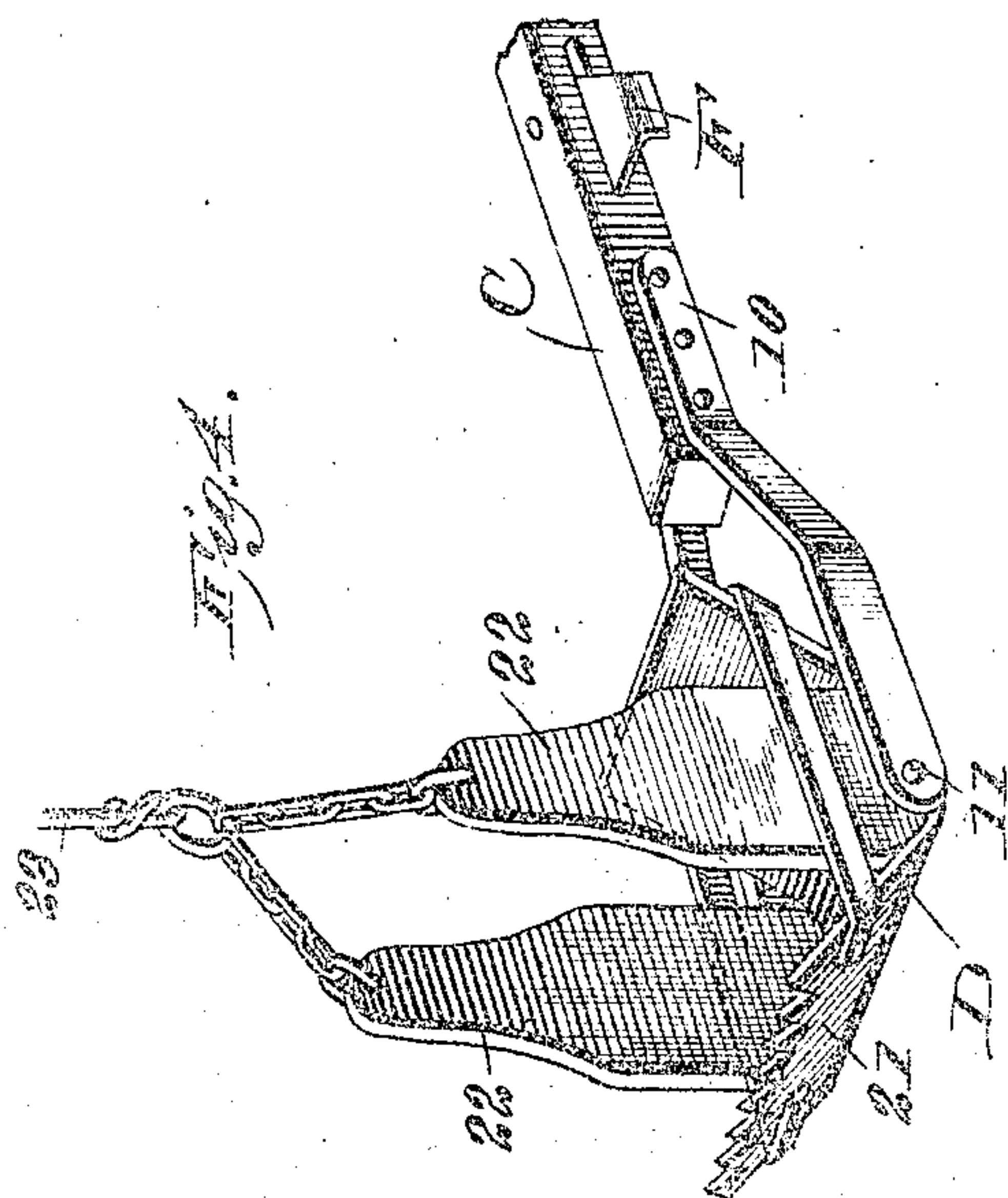
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3 SHEETS—SHEET 3.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

ANDREW J. BURCHAM, OF KELSO, WASHINGTON.

## DREDGE.

No. 510,710.

Specification of Letters Patent.

Patented Jan. 23, 1903.

Application filed October 30, 1905. Serial No. 285,121.

*To all whom it may concern:*

Be it known that I, ANDREW J. BURCHAM, a citizen of the United States, and a resident of Kelso, in the county of Cowlitz and State of Washington, have invented certain new and useful Improvements in Dredges, of which the following is a specification.

My invention is an improved dredger and scraper adapted to be operated on land or from a float on water for use in deepening or widening river-beds or opening canals, building levees, or working river-beds in placer-mining, and for other allied purposes.

The details of construction, arrangement, and operation of the machine are as hereinafter described, the novel features being specifically indicated in the claims.

In the accompanying drawings, Figure 1 is a perspective view of the machine as set upon a bank and operating in a canal, river, or ditch. Fig. 2 is a face view of the machine. Fig. 3 is a central vertical section. Fig. 4 is a perspective view of one of the diggers and scrapers, together with the part to which it is pivoted. Fig. 5 is a detail section illustrating the means for locking the swinging beams that carry the diggers with booms extending laterally from the frame of the machine.

The movable parts of the machine are attached to or connected with a frame A, comprising vertical standards or guides 1, lateral braces 2 therefor, and rear inclined braces 3, all of which are set upon and secured to a horizontal base 4. The standards 1 are connected with the rear braces 3 by bars 5, and the braces 3 are connected by bars 6, which serve as a ladder. The standards 1 are suitably secured to the base 4. The base may be set upon land at the edge of the bank of a canal or stream, as indicated in Fig. 1, or placed upon and secured to the bow of a boat, scow, or float of any character. The standards 1 are spaced apart and between them slides a block B, to which are connected swinging beams C, that carry the diggers and scrapers D. The parts 1 1 thus serve as vertical "guides," "leaders," or "gins," as they are variously termed, and in this respect are similar to the guides or leaders provided on pile-drivers.

A block 8 is attached to the block 9, which slides between the leaders 1 and extends across the faces of the latter, as shown. The beams C C are pivoted to the face of this block 8 in such manner that their lower ends are adapted to swing laterally toward and from each

other. The diggers and scrapers D are pivoted to the lower ends of the beams C, the particular means of attachment being iron straps 10, which are bent laterally, the diggers being pivoted at 11 between their lower ends. A rope or chain 12 passes over pulleys 13, journaled in a block secured upon the head 14 of the frame A, and extends down and is connected with the beams C C, the latter having slots through which the rope is passed and then joined to itself, thus forming a loop 15. Pulleys 16 (see Figs. 2 and 3) are journaled in the aforesaid slots. The rope or chain 12 serves to raise and lower the beams C C, together with the diggers D and the block B. It is apparent, however, that when strain is applied to the rope 12 the tendency of the loop 15 is to draw the beams C toward each other or together, as well as to lift them along with the block B. The rope 12 passes to the winding-drum of an engine. (Not shown.)

Booms E are pivoted to the frame A on each side thereof near the base 4. The booms are formed of two divergent beams 16, whose inner ends are suitably pivoted or hinged and their outer ends firmly connected. Ropes or chains 17 are connected with the outer ends of the booms and pass over pulleys 18, connected with the head of the frame A, and thence to a winding-drum on the engine. By means of these ropes 17 it is apparent that the booms may be raised or lowered, as conditions may require. As shown, the front beam of each boom is hinged to a beam 19, extending across the front of the guides or leaders 1 and securely bolted thereto, and sheet metal 20 is applied thereto in such manner as to serve as a fender by diverting mud, earth, stones, &c., from the beam in the operation of the machine. It will be understood, however, that this is a detail, and the booms may be otherwise attached to the frame A.

The diggers and scrapers D are preferably constructed of boiler-plate 21, the same being curved, and broad sides 22 being attached, so as to subserve two purposes—namely, to retain a due quantity of mud, sand, gravel, stone, or other material taken up by the diggers while the same are being hoisted and also as means for attachment of ropes or chains 23, the same passing over pulleys 24 at the outer ends of the booms E, thence over pulleys 25 on the frame A, and finally to a drum (not shown) on the engine. One end of the scraper-body 21 is preferably serrated



and the other plain or straight for the purpose of adapting one end of the digger to work in gravel or stony beds and the other in mud, sand, or soft material. The part 21 is provided with a number of perforations in the bottom portion to allow escape of water that may be taken up in the digging operation, and also to allow admission of air when the contents of the diggers are being discharged.

It will now be understood that if the machine be placed at the edge of a bank or located upon a float upon releasing the ropes 12 and 23 the beams C and the block B will be lowered, thus carrying the diggers D directly downward and allowing them to strike upon the bottom in such manner that the lower edge takes into the bottom of the canal or river bed. Traction being then simultaneously applied to the ropes 12 and 23, it is apparent the diggers will be hauled laterally or apart from each other, and thereby caused to be picked up filled with material, and, traction being continued, they are carried up out of the water—say to the position indicated in Fig. 2, where the beams C must be temporarily locked while the dredges or buckets D are being tilted and discharged of their contents. For this purpose I employ dogs or pawls F, (see Figs. 1, 2, 5,) the same being constructed of metal and pivoted in slots 26 and provided with an angular nose 27, that normally projects from the slot, whereby they are adapted to ride over the side of the front beams of the boom E when the diggers D are raised, as indicated in Fig. 2. It is apparent that as soon as the dogs F shall have passed to the upper side of the booms E upon slackening the ropes 23 the dogs will engage the booms, and thus hold or lock the diggers in elevated position, so that upon further loosening of the ropes 23 the diggers will tilt and discharge their contents. This discharge may be into scows or other receptacles or upon the banks, as the case may be. It is obvious that the booms E may be set at different inclinations, according to the height to which it is desired to raise the diggers with their load before discharging the latter. Upon again applying due tension to the ropes 23 the beams C will be raised, so that the dogs may be released from the booms and the beams C allowed to swing back to their normal vertical position, when the operation already described may be repeated.

It is apparent that by the construction of a dredging-machine in the manner already described I am able to utilize a frame such as employed in pile-driving and that the operation of the same is simple, while it is capable of performing a large amount of work, particularly by reason of the fact that two diggers and scrapers are operated simultaneously, whereas in machines of this general class a single digger is ordinarily employed.

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

1. The improved dredging and scraping machine comprising a frame having a vertical guide, a block adapted to slide vertically on said guide, beams pivoted to said block, and diggers pivoted to the lower ends of the same, the beams being adapted to swing laterally, booms pivoted to the sides of the frame, and means for locking the swinging beams therewith when the diggers are elevated, and means for raising and lowering the booms with the diggers and also the beams and for raising the diggers to the position required for discharging their load, substantially as described.

2. The improved dredger comprising a frame having vertical guides, a block adapted to slide vertically between them, beams pivoted to the block, and diggers pivoted to the lower ends of the same and provided with arms arranged at an angle to their digging and scraping edges, a hoisting and lowering rope connected with the digger-beams and the aforesaid block, booms pivoted to the sides of the frame, and means for raising and lowering them, ropes or chains connected with the diggers and connected with the outer ends of the booms, whereby the diggers may be hauled laterally outward and upward, and means for locking the digger-beams with the boom for supporting the diggers while their load is being discharged, substantially as described.

3. The combination, with a suitable frame having vertical guides and a block adapted to slide on the guides, of beams pivoted to such block, and diggers pivoted in the lower ends of the beams, a hoisting and lowering rope passing over the top of the frame and having a loop extending through slots in the digger-beams at a point some distance below their pivots, and means for hauling the diggers proper laterally, substantially as described.

4. In a dredger of the class indicated, the combination, with a suitable frame, of pivoted beams made vertically adjustable, diggers connected with their lower ends, and means for hoisting the digger-beams and diggers, and also hauling the latter outwardly from each other, substantially as described.

5. In a dredger of the class indicated, the combination, with a suitable frame and a member adapted to slide vertically thereon, of a beam pivoted to such member, and a digger attached to the lower end of the beam, and means for raising the said member, the beam, and the digger, and for hauling the digger laterally, substantially as described.

6. In a dredger of the class indicated, the combination, with a frame and a lateral boom, of a pivoted and vertically-adjustable beam and a digger attached thereto, a dog



pivoted to each of the digger-beams and adapted to slide over and engage a boom, and means for raising the digger-beams and digger and for hauling the digger laterally, and for adjusting the boom higher or lower, substantially as described.

5 7. In a dredger of the class indicated, the combination, with the pivoted swinging

beam, of a digger proper comprising a curved plate having perforations in its middle portion, and side bars extending outwardly therefrom, substantially as described. 10

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Witnesses: --

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