

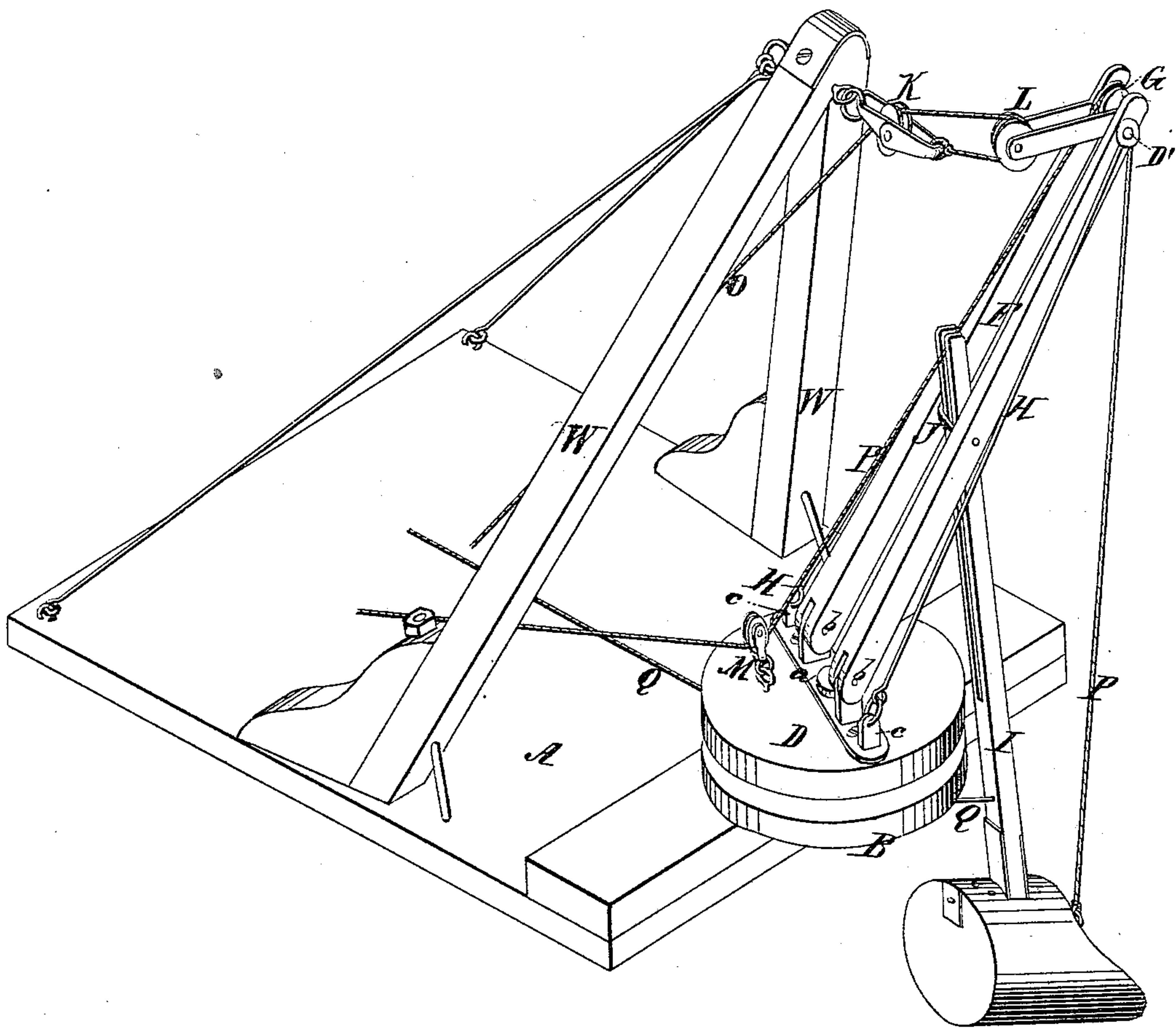
2 Sheets--Sheet 1.

R. R. OSGOOD.
Dredging-Machine.

Patented July 13, 1875.

No. 165,608.

Fig 1.



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James Martin Jr.

Inventor:
Ralph R. Osgood
By
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Fig 2.

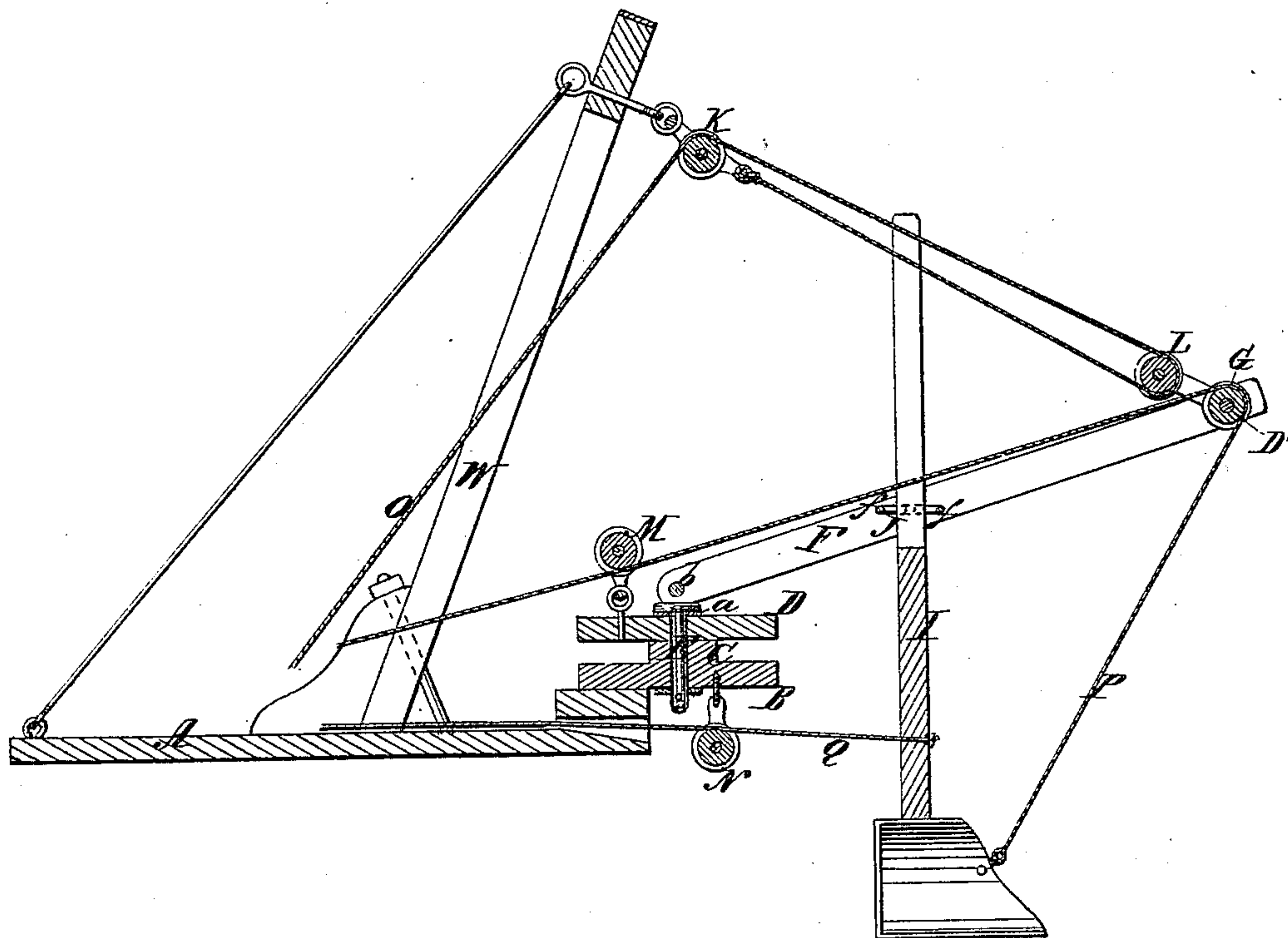
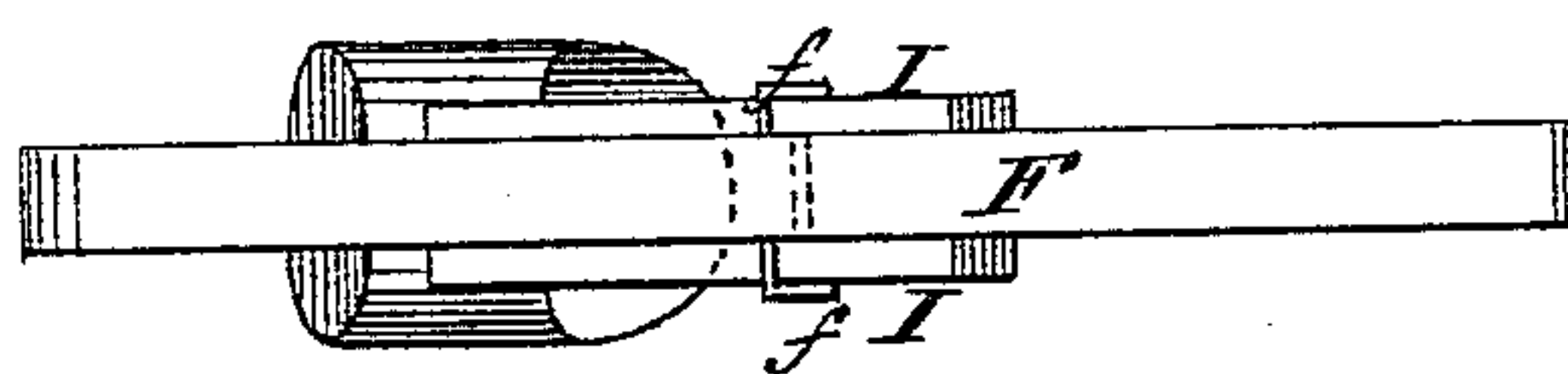


Fig 3.



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UNITED STATES PATENT OFFICE.

RALPH R. OSGOOD, OF TROY, NEW YORK.

IMPROVEMENT IN DREDGING-MACHINES.

Specification forming part of Letters Patent No. **165,608**, dated July 13, 1875; application filed June 17, 1875.

To all whom it may concern:

Be it known that I, RALPH R. OSGOOD, of Troy, county of Rensselaer and State of New York, have invented a new and useful Improvement in Excavating and Dredging Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of my improved machine; Fig. 2 is a vertical central section of the same; and 3 a modification of the form of the swinging boom and dipper-handle.

The nature of my invention consists in certain constructions and combinations of parts, as hereinafter described and specifically claimed, whereby that description of excavating and dredging machine which has the dipper combined with a vertically and horizontally swinging boom is greatly simplified, strengthened, and rendered more convenient for dredging in deep waters, and in all places where its use is required.

One of the main features of my machine is the pivoting of the boom to a turn-table, whose axial pivot does not extend up behind the boom so as to interfere with the required adjustments of the dipper-handle; and in connection therewith suspending the boom and dipper in an adjustable manner upon a standard, whose base is in rear or to one side of the axial pivot of the turn-table, this plan enabling me to use a dipper attached to a handle, which moves upon a boom when the angle of the dipper with respect to the bed of the river or earth is required to be changed—no obstructions being offered by an upward extension of the axial pivot of the turn-table, and the suspending-standard being properly inclined to afford room for the handle to slide and swing in during the operation of the machine for dredging or excavating purposes. Another important feature is an adjustable backing-sheave in combination with a backing-chain. Another important feature is an adjustable hoisting-chain sheave, placed on the turn-table, in combination with a hoisting-chain. And another important feature is the combination of a suspending boom-chain, a hoisting

dipper chain, self-adjusting sheaves, an overhanging standard, a hinged boom, and a turn-table, the latter having its axis forward of the foot or base of the overhanging standard. Another important feature is the bracing of the boom with hinged braces, which always remain taut no matter what may be the position of the boom.

To enable others skilled in the art to make and use my invention, I will now describe the construction and operation of the same with reference to the drawings.

A, in the drawings, is intended to represent the deck of a boat for a dredger, or the floor of a car for an excavator. At a suitable point on this deck or floor (one end preferred) a strong step or bracket, B, is firmly secured. This step has a pivot or bearing-box, C, constructed upon it, and upon this box a turn-table, D, is placed. The turn-table is connected loosely to the step by means of a central pivot, E. To the top of the turn-table a boom, F, composed of two separate arms, is hinged by means of a strong bar, *a*, bolted to the turn-table, said bar having hinging lugs extended up from its surface on each side of the pivot E, and to these lugs the lower ends of the boom-pieces are hinged or pivoted, as at *b b*. The upper ends of the boom-pieces are connected together by a shaft, D', on which a sheave, G, is placed. Outside of the boom-pieces stays or braces H H are applied these being hinged or linked to lugs *c c*, of the bar *a*, in a line coinciding with the pivots *b b* of the boom-pieces. The upper ends of these braces are fastened to the outer ends of the sheave-shaft D'. The boom thus arranged and constructed can be swung around and its outer end raised or lowered without losing the benefit of the stays or braces. The stays or braces being hinged in a line with the pivot or hinge of the boom the relative position of the braces and boom remains the same at all times no matter what may have been the change made in the position of the boom and turntable during the operation of the machine. It is very essential that the boom be braced, and when braced provision must be made for change in position of the braces accordingly as the boom is raised and lowered.

My plan of bringing the braces in a line

with the hinge or pivot of the boom enables me to effect the desired result at very slight cost.

I is the dipper-handle, passed through a guide, J, of the boom, between the boom-pieces. The dipper-handle is not pivoted to this boom, but is free to slide or travel in its guide while the dipper is being raised and lowered. In practice the guide will oscillate, and may be constructed with suitable clamping or retaining devices, by which the handle will be held at any point desired, but as this forms no part of my present claim I have not represented such contrivance. One suitable controlling-guide would be the plan shown in Letters Patent granted to me May 4, 1875. In order to allow the handle of the dipper to travel in and out in its bearing the standard W, upon which the boom and dipper are suspended, is constructed and arranged to have its base support outside the circle in which the rear end of the dipper-handle swings.

In the drawings I have represented the standard W as inclined, and its upper end overhanging the axial pivot of the turn table. In this construction the base support of the standard is in rear of the turn-table. By this means the standard is thrown back out of the way of the sweep of the dipper-handle while the boom is being swung around to discharge or collect a load. If this was not done the handle could travel but a very short distance in its bearing before it was obstructed by the standard or mast rising from the center of the turn-table of ordinary machines. Instead of setting the feet of the standard in rear of the pivot, they might be spread far enough apart to permit the handle to swing round between them, in which case it would not be necessary to have the base support of the standard in rear of the axial pivot of the turn-table. I, however, prefer the plan shown, as it is very compact, and answers well the purpose intended.

K and L are pendulous sheaves, attached respectively by links to the standard and boom. M and N are hinged or linked sheaves, attached respectively to the upper side of the turn-table and to the under side of the support thereof. O is a suspending-chain fastened by one end to the link of the sheave K, and carried under and over the sheaves K and L and back to a windlass. By this chain the boom, with the handle and dipper, is raised and lowered at the will of the operator, and during the operation of swinging the boom and dipper around the sheaves are free to accommodate themselves to the different positions the parts are caused to assume. P is a hoisting-chain attached by one end to the dipper, and carried up over the sheave G and down through the forked handles of the dip-

per, and thence under the self-adjusting sheave M to a windlass. By means of this chain the dipper can be raised and lowered to any desired position, and during the operation of swinging the boom around, the sheaves M and K are free to assume positions which are antagonistic to one another, and by this means balance the tension which is on the chains O and P, and the boom is prevented from swinging back by the simple tension of the chain O. Q is a backing-chain, attached by one end to the dipper-handle, and carried back to the self-adjusting sheave N, and thence to a windlass, as shown. By this chain the dipper can be drawn back in position for taking its load. It will be seen that the sheave N is attached directly under the support of the turn-table, and thus can be carried in a direct manner from the dipper-handle to the windlass. This plan greatly simplifies the machine and avoids the use of several sheaves. The sheave N is hung so as to accommodate itself to the position that the chain assumes while the boom and dipper are being swung around. In Fig. 3 the boom F is shown as made of one piece, and the dipper-handle I of two pieces, so that the boom can pass through the handle. In this construction stops *f f* are provided for preventing the handle from falling or rising out of the position it is set for operating. These stops do not prevent the handle traveling in its bearing.

What I claim is—

1. A dipper-handle, which travels in its bearing on a boom and swings vertically independently of the boom, while said boom is capable of angular motion both horizontally and vertically, substantially as and for the purposes set forth.

2. The turn-table, with its boom, in combination with the suspending-standard W, substantially as and for the purpose described.

3. The braces of the boom, hinged to the turn-table on a line with the hinge of the boom, substantially as and for the purpose described.

4. The self-adjusting backing-chain sheave, applied below the support of the turn-table, in combination with the backing-chain attached to the dipper-handle, substantially as and for the purpose described.

5. The combination of the self-adjusting and balancing sheaves K and M, chains O and P, boom F, turn-table D, and dipper-handle, substantially as and for the purpose described.

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Witnesses:

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