

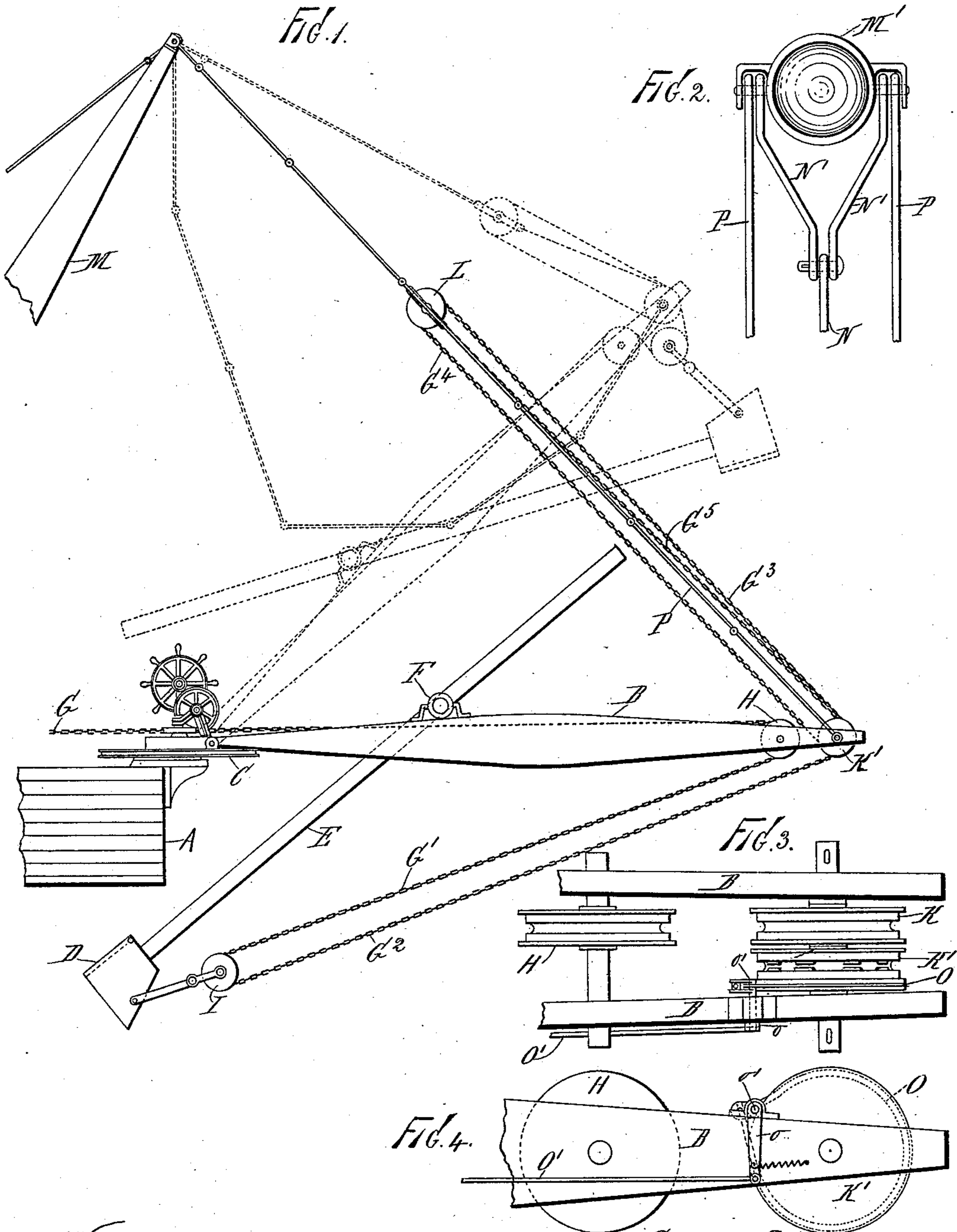
(No Model.)

3 Sheets—Sheet 1.

R. R. OSGOOD.
DREDGE AND EXCAVATOR.

No. 362,587.

Patented May 10, 1887.



Witnesses:
John Buckler,
L. H. Osgood

Ralph R. Osgood,
Inventor:
By North Osgood
Attorney.

(No Model.)

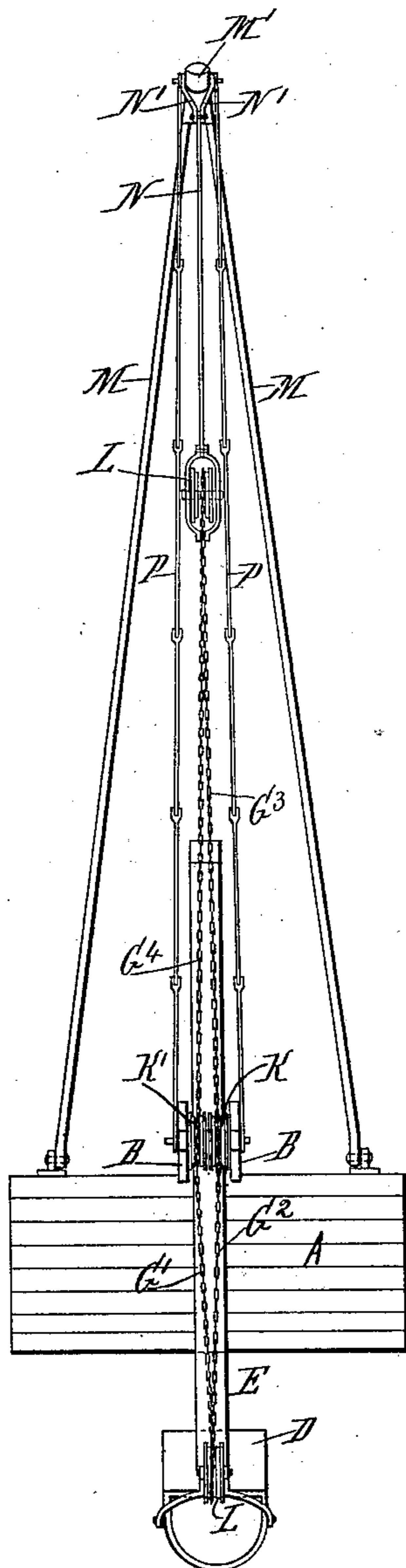
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Fig. 5.



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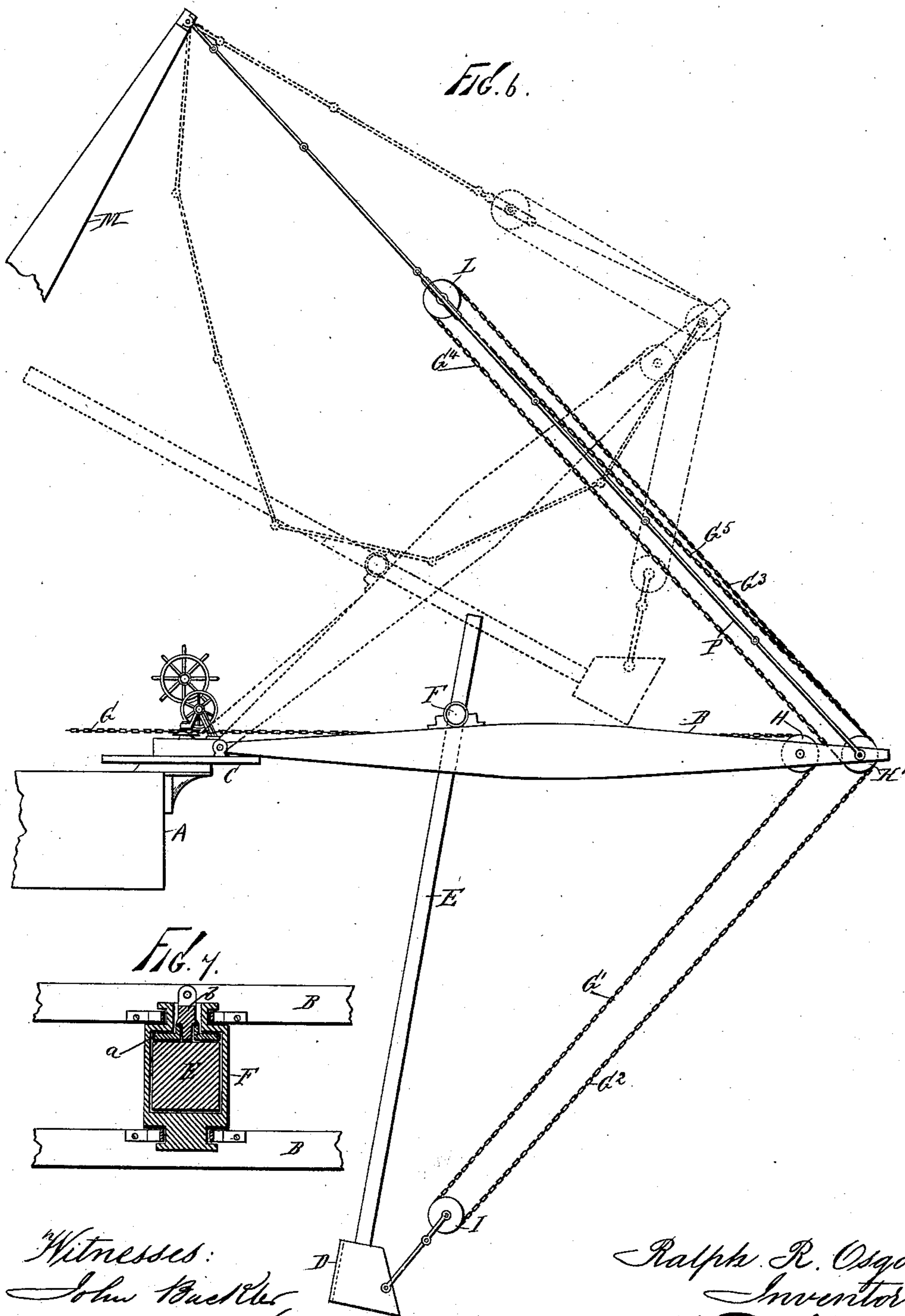
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UNITED STATES PATENT OFFICE.

RALPH R. OSGOOD, OF ALBANY, NEW YORK.

DREDGE AND EXCAVATOR.

SPECIFICATION forming part of Letters Patent No. 362,587, dated May 10, 1887.

Application filed October 21, 1885. Serial No. 180,508. (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 Dredges and Excavators, 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 that class of machines known as "dredges" or "excavators," employed for excavating earth or other material, and usually mounted upon a boat or car and supplied with a scoop, dipper, or
15 bucket mounted upon a dipper-handle and intended to receive the load and deliver it at the point required.

The principal object of my invention is to
20 so arrange the dipper moving and controlling parts of the machine that the dipper may be drawn into the bank by the hoisting-chain under the most advantageous practical application of the required power, and then by the same hoisting-chain elevated to any required
25 height previous to delivering its load; and subordinate objects are the provision of simple and efficient means for enabling the dipper to be easily, quickly, and powerfully moved in the direction required, to be readily lowered
30 to the desired points to take its load, to prevent the boom or dipper-handle support from being lowered too far, to prevent the boom from rising before the time required, to place the dipper-moving elements within the easy
35 control of one man, and to secure other advantages, as will hereinafter appear.

To accomplish all of this my improvements involve certain novel and useful peculiarities of construction, relative arrangements or combinations of parts, and principles of operation,
40 all of which will be herein first fully described, and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of the front portion of a dredging-machine constructed and arranged for operation in accordance with my invention and involving the principles thereof, the dotted lines indicating one position to which the dipper and boom
50 may be elevated, the boiler and engines and driving machinery being omitted, the same being unnecessary to a complete understand-

ing of the invention. Fig. 2 is a front elevation upon a scale enlarged beyond that of Fig. 1, showing the head-block upon the frame and
55 indicating one manner which may be conveniently adopted for sustaining the upper ends of the stop chains or rods. Fig. 3 is a plan view, also upon a scale enlarged beyond that of Fig. 1, showing the outer end of the boom
60 with the sheaves therein and a friction appliance for arresting the movement of one of the sheaves, and thereby preventing that part of the hoisting-chain above the boom from traveling and arresting the vertical movements of
65 the boom; and Fig. 4 is a side elevation corresponding with Fig. 3. Fig. 5 is a front elevation of the device shown in Fig. 1, and upon a similar scale. Fig. 6 is a view similar to Fig. 1, showing different positions which the
70 dipper may be made to assume, and indicating that the dipper-handle travels back and forth in its bearings upon the boom. Fig. 7 is a horizontal section and partial plan view showing a convenient construction of the dip-
75 per-handle clamp or dipper-handle friction, such that will permit the desired movements of the dipper-handle.

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

A represents the boat or platform upon which the machinery is mounted, and it takes the place of any car or other support which may be desired to be used.
85

B is a boom upon which the dipper-handle is supported. This boom is hinged upon a turn-table, C, movable upon the platform A, and is sustained at its outer end in such manner as to withstand the strains to which it
90 may be subjected, and so that the outer end may be raised or lowered to any desired extent. The turn-table C is employed to swing the boom and the dipper mounted thereon from side to side, so as to bring the dipper
95 over any desired point either before receiving or before delivering its load.

D is the dipper, of any approved pattern, supplied with the usual dipper-door, and mounted upon the extremity of the handle E.
100 The dipper-handle E is supported upon the boom B, as at F, where it passes through a clamping and holding device called the "dipper-handle friction." The dipper-handle is

capable of movement through the dipper-handle friction back and forth, or in the direction of its length; or the dipper-handle may be held by the friction so that it will swing forward or back, as circumstances may require.

In order that the dipper may be drawn into the bank under advantageous application of the power, it is plain that the hoisting-chain should lead to the dipper from a point well forward of it, and to so lead the hoisting-chain the boom is well lowered. Then after the load is received it is necessary to elevate the boom with the dipper, in order to bring the dipper to the desired height to deliver its load into a scow or car, or to discharge it at any elevation above the platform. To accomplish this elevation of the boom and dipper, I employ the hoisting-chain, which is also used for drawing the dipper into the bank, and thus by employing only the one chain I am enabled to place these movements within the easy control of one man, and to dispense with a separate boom-raising chain or chains and a separate drum or drums therefor.

A variety of ways of reeving the chain may be devised; but I prefer the manner shown in the drawings, which is practical and efficient, and which will serve to illustrate the principle of this part of my invention. The hoisting-chain now to be referred to, it should be understood, is continuous from end to end, or is, in fact, but one chain, though for convenience of description I have designated the different portions or folds thereof by various letters and figures. The portion G, leading from the main chain-drum or hoisting-drum, (not shown,) is carried over the sheave H, leads down in the portion G', around sheave I, connected with the dipper, back in portion G², under sheave K near the end of the boom, up in portion G³, over sheave L, connected with the A-frame, down in portion G⁴, under sheave K', and back in portion G⁵, and made fast at its extremity with the casing or frame of sheave L, or at other convenient point.

The sheave L is suspended from the A-frame M by means of a jointed rod or equivalent chain or cable, as N. Under the construction shown, the head-block M' receives the arms N' N', which is a sort of yoke for connecting N with the A-frame, the head-block being capable of revolving upon the end of the A-frame, so as to permit the easy swinging of the boom without cramping or twisting the suspending devices.

The sheave K' is what is called a "bedded sheave," and receives the chain in such manner as to prevent it from slipping when the sheave is held fast. For arresting the movement of this sheave, and thereby preventing the movement of any part of the chain above it, I provide the sheave with some form of clutch, one form being shown in the drawings.

O represents a friction-band encircling a grooved flange formed with or connected with the sheave.

O' is a rod leading back to a position within

convenient reach of the engineer, and o is a lever connected with a rock-shaft, o', by which the friction-band is tightened, and at its outer end with the rod O'. This appliance stands in the place of any means suitable for arresting the motion of sheave K'.

The chain being rove in the manner or substantially in the manner indicated, and the boom being down and the dipper drawn back, as indicated, in position to commence taking its load, the dipper is drawn into the bank by portions G, G', and G², operating in a manner which will be readily understood, and the dipper, thus loaded, is made to continue its upward movement until the dipper or the sheave connected therewith comes block-a-block with the boom, when, by further winding up or drawing upon the hoisting-chain, the portions G³, G⁴, and G⁵ are shortened and the boom and dipper raised together to the desired height, as indicated by the dotted lines in Fig. 1. Then the load may be dumped and the dipper and boom again lowered to their respective working positions. When the boom is in its lowermost position, if the sheave K' be blocked or stopped by the friction appliance, it is plain that the portions of the hoisting-chain above the boom cannot move, and therefore all the moving power of the chain is directed toward moving the dipper, and the chain being twofold below the boom, the boom cannot rise during the operation of loading or until the sheave K' is released; and so, also, when the boom is arrested at any point above its limit of fall, it is held stationary or prevented from rising. The boom may be arrested at any point by simply blocking the sheave K' and the load taken and the boom and load elevated from the point at which the fall of the boom is thus terminated.

Under the arrangement shown, the chain above the boom is threefold, so that when the machine is required to elevate the weight of the boom, in addition to that of the dipper and its load, the power is exerted to better advantage as the weight is thus increased; but the hoisting-chain might be otherwise arranged above the boom and still accomplish the general purpose of my invention and be within the scope thereof.

To prevent the boom from accidentally falling too low, I provide stop rods or chains or cables, (represented at P P.) In the drawings these are shown as jointed rods, which are preferred, and they may be connected with the head-block of the A-frame, as most plainly shown in Fig. 2; or they may be secured to the A-frame in any preferred manner. When the dipper is elevated, they assume positions, substantially as indicated in Fig. 1, out of the way of all the working parts, and they arrest the downward movement of the boom at any desired point for which they may be adjusted. The hoisting-chain may be replaced by a cable, if desired.

When constructed and arranged for operation substantially in accordance with the fore-

going explanations, the engineer accomplishes all the work of raising and lowering the dipper and boom through the medium of the hoisting-chain, and for this he has only to control the movements of one hoisting-drum—a manifest advantage over any construction necessitating separate drums and separate chains for doing this work.

The usual backing-chains and other appliances may be adopted in connection with the improved machine, the same as in former constructions.

The dipper-handle friction shown at Fig. 7 is one constructed upon the general plan set forth in my patent, No. 162,849, of May 4, 1875, and no part of it is specially claimed herein. The clamping-plate *a* is crowded against the handle *E* by a plunger, *b*, operated through any convenient lever, and when so crowded prevents the handle from moving except with the piece *F*, which is mounted upon the boom on suitable trunnions, as will be readily understood. The particular construction of the clamp is, however, not material, since any efficient clamp will answer as well.

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

1. In a machine of the character herein set forth, the hoisting-chain leading from the dipper to a point above the boom and arranged and combined with the boom and dipper, and a friction appliance, substantially as explained, so as to draw the dipper into the bank or to hoist the dipper and the boom with the one chain, for the purposes and objects set forth.

2. In a machine of the character herein set forth having the hoisting-chain extended above and below the boom, as explained, the combination, with the boom, of a sheave for the hoisting-chain to run upon and a friction ap-

pliance for the purpose of arresting the motion of said sheave, substantially as shown and described.

3. In a dredge or excavator, the hinged boom, the dipper sustained thereon upon a handle arranged to travel back and forth within its bearings on the boom, and the hoisting-chain connected with said dipper below the boom and extending above the boom, and arranged to move the dipper and the boom, substantially in the manner and for the purposes set forth.

4. In a dredge or excavator, the hinged boom provided with the three sheaves, the dipper provided with a sheave, the sheave suspended from the *A*-frame above the limit of travel of the boom, and the hoisting-chain rove around the several sheaves, these parts being combined and arranged substantially as and for the purposes explained.

5. In a dredge or excavator, the combination, with the hinged boom carrying the dipper and its traveling handle and arranged to be elevated by the dipper-hoisting chain, of the stop-rods suspended from the *A*-frame and connected with the boom, substantially as and for the purposes explained.

6. In combination with the boom and dipper mounted upon a handle connected with said boom, the hoisting-chain rove above and below the boom, as explained, so as to have more folds above than below, for the purposes and objects named.

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

RALPH R. OSGOOD.

Witnesses:

JOHN BUCKLER,
WORTH OSGOOD.