

A. N. SMITH.
Derrick and Crane.

No. 220,182.

Patented Sept. 30, 1879.

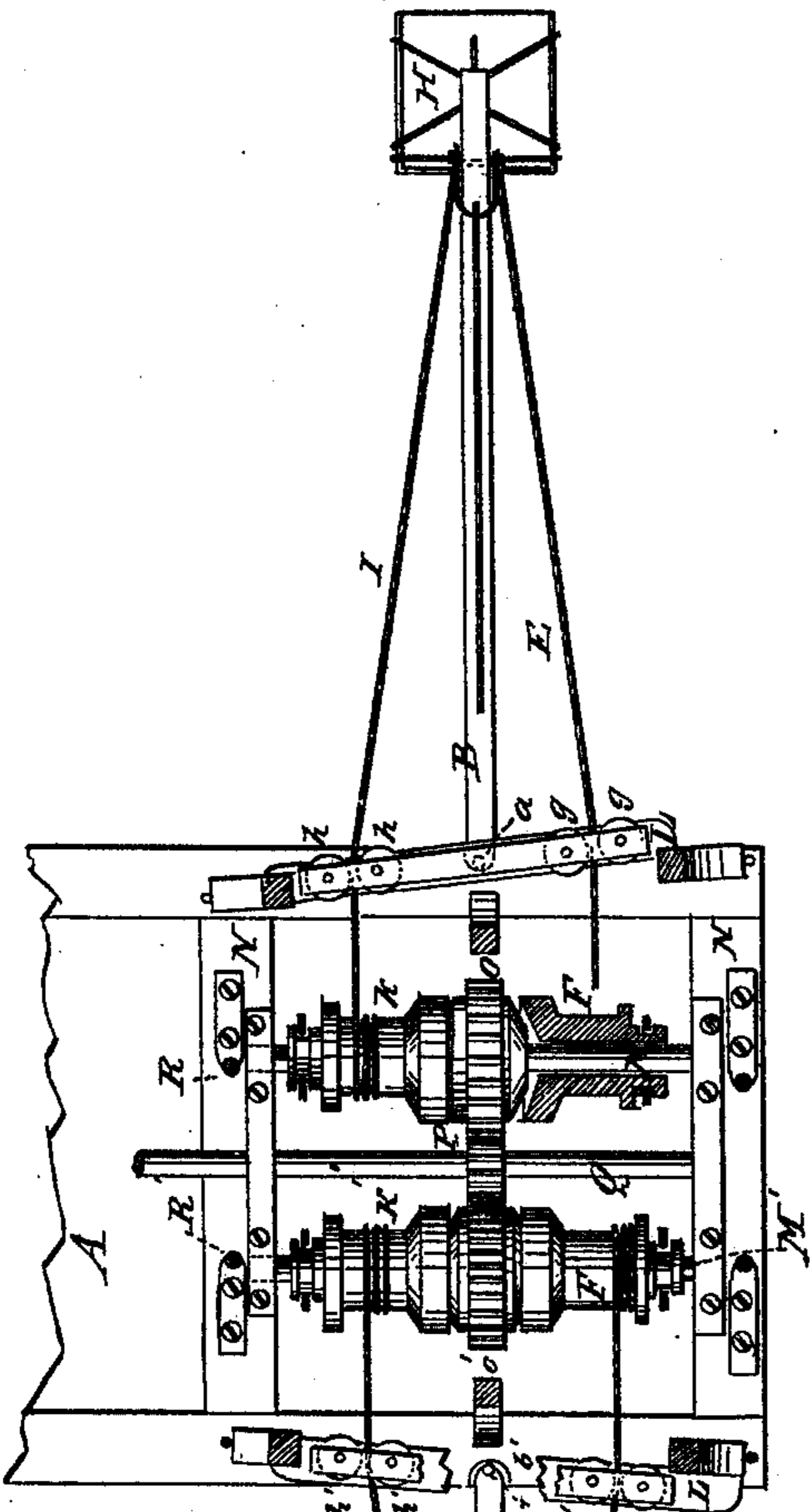


Fig. 1.

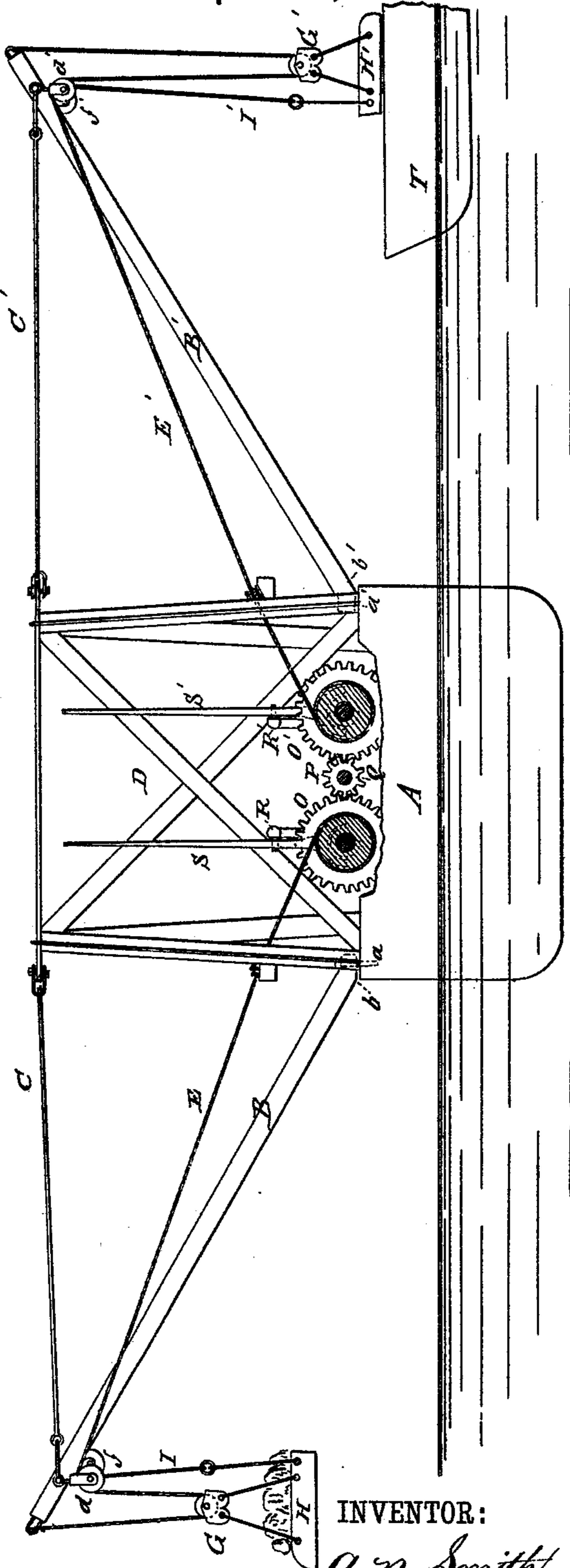


Fig. 2.

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AMBROSE N. SMITH, OF PORTAGE, WISCONSIN.

IMPROVEMENT IN DERRICK AND CRANE.

Specification forming part of Letters Patent No. 220,182, dated September 30, 1879; application filed March 22, 1879.

To all whom it may concern:

Be it known that I, AMBROSE N. SMITH, of Portage, in the county of Columbia and State of Wisconsin, have invented a new and Improved Derrick and Crane, of which the following is a specification.

Figure 1 is a plan of the apparatus, with a portion of the frame-work removed to better exhibit the working parts. Fig. 2 is an end elevation of the same.

Similar letters of reference indicate corresponding parts.

The object of this invention is to construct a double derrick and crane and place them on a dredge-boat, for the purpose of receiving earth, &c., from a dredge, and conveying and depositing the same away from the boat, and so to arrange the said derrick and crane that the weight which is being lifted by the one shall be counterbalanced on the opposite side by the other, so as to prevent the boat from listing or rolling.

The heavy horizontal frame shown is intended to represent the dredge-boat A, but the dredge and its operating machinery are not shown.

The swinging booms B B', that are alike both in construction and arrangement, are pivoted at their lower ends by stout vertical pins *a a'*, or other suitable device, on opposite rails of the boat, at *b b'*, so that they possess a maximum range of adjustment for all the contingencies of work, and are enabled to reach much farther than if they were stepped in the center of the boat, as is usual with a single derrick or crane.

The lifts or stays C C' of the booms are of the usual character, and made fast, as shown, to the top of the triangular frame D of the apparatus. The hoisting ropes or chains E E' are made fast to the ends of the booms and carried over the hanging sheaves *d d'*, and thence to the friction-winches F F', to which they are made fast. On the loops or bights of these hoisting-ropes, that fall between the ends of the booms and the sheaves *d d'*, the pulley-blocks G' G' are suspended, and from eyes in these the crane-boxes H H' hang suspended by four chains. The emptying or discharging lines I I' are attached to the sides of these boxes, near their backs, and led up

through the hanging sheaves *f f'*, and thence to the winches K K', to which they are made fast.

In passing from the sheaves to the winches both the hoisting-ropes and the discharging-lines are led between sheaves or friction-rollers *g g* and *g' g'*, and *h h* and *h' h'*, respectively, that are pivoted on the slanting cross-bars L L, that brace the uprights of the triangular frame, so that whichever way the booms are swung in their work, the ropes and lines will run freely and without chafing.

It will be seen that each derrick or crane box is operated by a pair of winches, one of each pair controlling the hoisting and lowering of the box, and the other controlling the discharge therefrom. These winches are set, in appropriate pairs, loosely on shafts M M', that have their bearings on cross-timbers N N, and on the said shafts, between the winches of each pair, are firmly keyed the friction cog-wheels O O', that gear with the pinion P, which is set between them on the driving-shaft Q, that also revolves in suitable bearings on the timbers N N.

Pivoted to the horizontal bars R R' are the shifting rods or levers S S', whose forked ends project downward and embrace the friction-winches. By these shifting-levers any one of the winches may be thrown in or out of connection with its appropriate cog-wheel, so that the hoisting, lowering, and discharging of the boxes are, when the apparatus is at work, entirely under the control of the operator of the levers.

For the purpose of illustration, a cone friction arrangement is shown between the cog-wheel and the winches; but any equivalent device may be employed.

The boiler and engine designed to supply power to operate this mechanism, as well as to operate the dredge, may be suitably placed aft of the winches.

In the drawings, one crane-box is shown fastened to a small scow or box, T, that is intended to counterbalance the load that is being carried by the opposite crane. When the machine is in position to work, the crane carrying this scow or box T is to be swung off at right angles to the dredge-boat, so that the scow may be lowered and rest upon the water, in which it will be anchored if the force of the current

makes it necessary. Then, when the load that the opposite crane is carrying out begins to weigh down that side of the boat, the counterbalance-boom will begin to lift on the counterbalance, and if the counterbalance be heavier than the load that is being conveyed the boat will be kept on nearly an even keel.

It is obvious that when the weight of this scow and box is not required as a counterbalance, it rests upon the water without strain upon any portion of the machinery of the boat, and that it becomes available just when the boat rolls or lists enough to require its service.

The ropes or chains E, leading from the winches to the counterbalance, are to be kept taut by means of a ratchet and pawl on the winch, or by some equivalent device.

If the machine be at work where there is not room enough or water enough to float this counterbalancing scow and box, they may be lowered upon the neighboring bank and weighted down with stones or other material.

The box on the one crane may be at any time exchanged for the box and scow on the other, so that the work of conveying the contents of the dredge may be done from either side of the boat.

I am aware that it is not new to employ a box for carrying out earth from a dredge; but I know of none in which a trip-lever is not used to dump or discharge the load, and such an arrangement requires two men to operate

it—one to hook the lever, and the other to trip it when the load is to be discharged.

With my device of discharging-lines, the man who has charge of the hoisting mechanism can control the action of the box without any help from another.

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

1. The herein-described double derrick and crane, located upon a dredge-boat, A, and consisting, in part, of the booms B B', stays C C', triangular frame D, hoisting ropes or chains E E', discharging-lines I I', crane-boxes H H', and counterbalancing box or scow T, substantially as herein shown and described.

2. The discharging-lines I I', in combination with the crane-boxes H H', substantially as and for the purpose described.

3. In combination with booms B B', the crane-boxes H H', and counterbalancing box or scow T, substantially as herein shown and described.

4. The combination of two derricks and cranes with crane-boxes H H', lines I I', box or scow T, ropes or chains, stays, pulleys, and frame to the same hull or boat that carries a dredging-machine.

AMBROSE NORWOOD SMITH.

Witnesses:

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CHRISTIAN C. SMITH.