

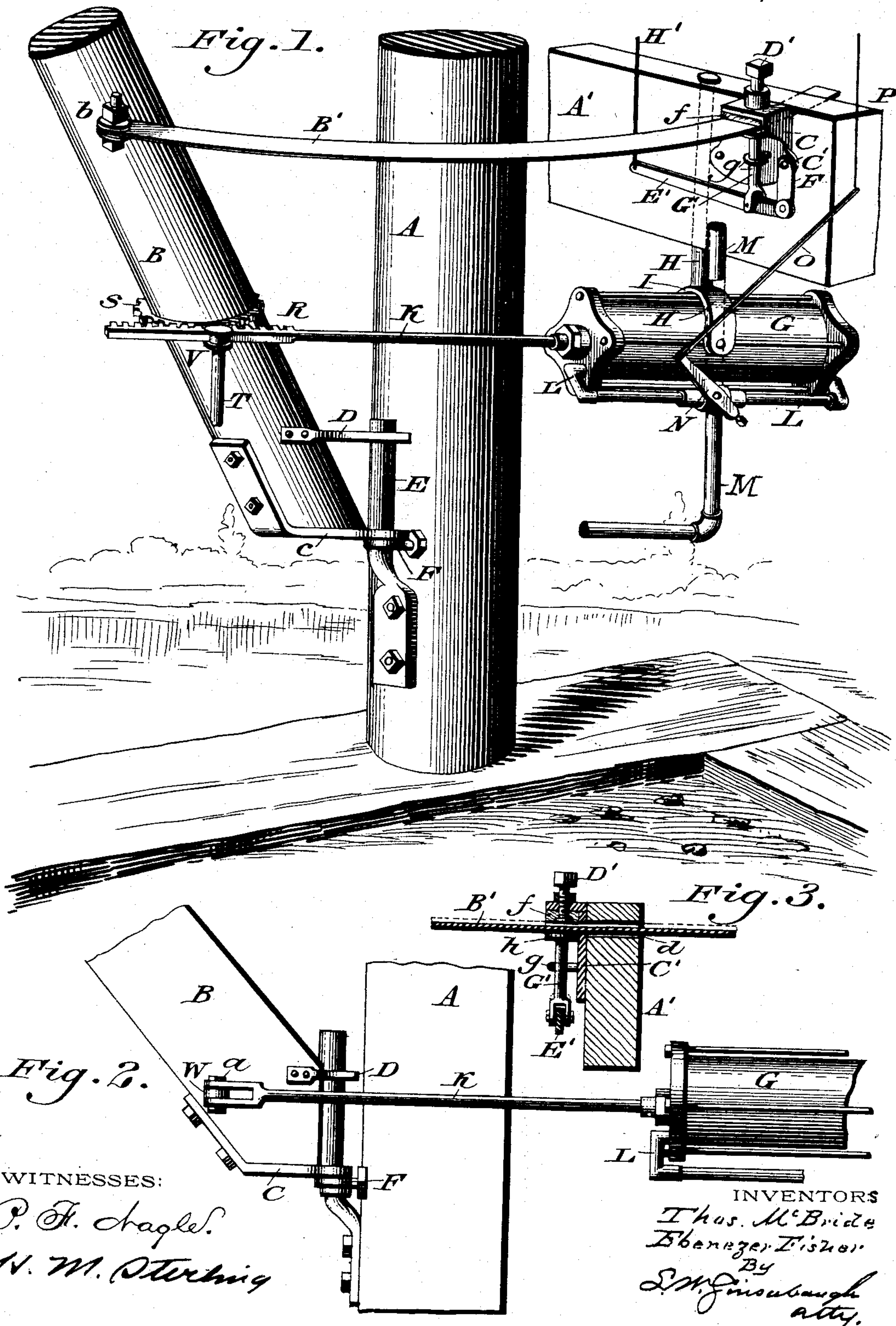
(No Model.)

T. McBRIDE & E. FISHER.

APPARATUS FOR OPERATING DERRICKS OR CRANES.

No. 412,525.

Patented Oct. 8, 1889.



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# UNITED STATES PATENT OFFICE.

THOMAS McBRIDE, OF PHILADELPHIA, PENNSYLVANIA, AND EBENEZER FISHER, OF KINCARDINE, ONTARIO, CANADA.

## APPARATUS FOR OPERATING DERRICKS OR CRANES.

SPECIFICATION forming part of Letters Patent No. 412,525, dated October 8, 1889.

Application filed May 22, 1889. Serial No. 311,705. (No model.)

### *To all whom it may concern:*

Be it known that we, THOMAS McBRIDE, a citizen of the United States, and a resident of Philadelphia, county of Philadelphia, and State of Pennsylvania, and EBENEZER FISHER, a subject of the Queen of Great Britain, residing at Kincardine, Province of Ontario, Dominion of Canada, have invented new and useful Improvements in Apparatus for Operating Derrick or Cranes; and we do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in devices for operating cranes and derricks, and the object of which is to supply a device by which the boom of the derrick can be swung around into different positions by steam, water, or other power, to enable the scoops or other devices to receive and deposit their load.

Figure 1 is a view in perspective of our invention. Fig. 2 is a view in side elevation of a modification. Fig. 3 is a sectional view of a portion of the device for checking the boom.

A indicates the mast of the derrick, which is properly secured at its base and held in a vertical position by suitable guy ropes or rods in a manner well known in this class of devices.

B is a boom, the lower end of which is provided with metallic eye-plates C and D, adapted to fit over the bar or rod E, which is firmly secured to the lower portion of the mast, an eyebolt F being passed over the bar or rod E and firmly secured in the mast, on which the boom is supported at its lower end, the upper portion of said boom being connected to the top of the mast by means of ropes or iron rods (not shown) in the usual manner.

G is a cylinder pivoted between the two jaws I of the hanger or rod H, so as to have a motion in a vertical plane, the upper end of said rod or hanger being passed up through a suitable opening in a supporting-beam A' (shown in Fig. 1) in such a manner that the cylinder can be moved around in a horizontal plane as well as in a vertical direction.

The cylinder G is provided with a piston-

rod K and the usual piston-head working within said cylinder, and also with a steam, water, or compressed-air supply pipe L, which enters both ends of the cylinder, the steam, water, or compressed air being supplied to the central portion of the pipe L through the pipe M from any suitable source of power. The pipes L and M at their point of union are provided with a three-way cock, which is operated by the lever N, said lever being connected to the bar O and the operating-rod P, which is within easy reach of the operator, so that the steam or other motive power can be admitted at either end of the cylinder to force the piston in the direction desired. It will be understood that the cylinder is provided with the usual exhaust-ports and other parts necessary for its complete working.

The outer end of the piston-rod K is formed into a rack R, the teeth of which engage with a segmental rack S, secured to the boom B. The end of the piston on which the rack R is formed is held in engagement with the segmental rack S on the boom by means of the rod T, the upper end of said rod being provided with a grooved friction-wheel V to receive and support the piston. In Fig. 2 we have shown a modification in which the outer end of the piston-rod K is secured to the boom by means of an eyebolt W, the outer end of the piston-rod being bifurcated to fit over the eyebolt W, and provided with holes to receive the bolt *a*, which holds these parts together.

In order that the derrick may be under the full control of the operator at all times, we provide a brake for arresting it at any desired point, and the devices forming the brake are as follows:

B' is a curved bar of iron pivotally secured at one end to the boom B, as shown at *b*, Fig. 1, the other end of the curved bar being passed through a bracket C', secured to the supporting-beam A', and through a slot *d*, formed in said beam, as shown more plainly in Fig. 3. The object of making the bar B' curved is to allow it to conform to the curve described by the boom in its swinging motion, and so it will not bite or impinge on the sides of the slots which guide it.

D' is a set-screw seated in the top at the



bracket C', and to the lower end of said set-screw is attached a brake-block *f*, of wood or other suitable material.

E' is a lever pivoted at one end to the bar or hanger F', the upper end of said bar or hanger being secured to the beam A'.

G' is a snubbing-bar secured to the lever E, and passes up through the eyebolt *g*, the upper end of said snubbing-bar being provided with a large flat head *h*, as shown in Figs. 1 and 3:

To the outer or free end of the lever E' is secured a rod H', which passes up and is connected with a treadle (not shown) in the operator's room, so that when the outer or free end of the lever E' is raised the head *h* of the snubbing-bar G' will force the bar B' against the brake-block *f* and stop the derrick or decrease its motion to any desired extent.

As before intimated, the mast may be set in bearings and the piston-rod attached thereto, so as to turn the same; but we prefer to fasten the mast rigid and attach the boom thereto and operate it in the manner described.

What we claim, and desire to secure by Letters Patent, is—

1. In a device for swinging derricks, the cylinder G, hung on pivots so as to have a vertical movement and supported by a bar adapted to turn in its support to admit of a horizontal movement, in combination with the

piston-rod and means for connecting it with the boom of the derrick, as set forth.

2. In a device for swinging the booms of derricks laterally, the boom B, pivoted to the mast A, as described, the piston-rod K, having a rack at its forward end gearing with a segmental rack on the boom, and a cylinder in which the piston-rod is moved by steam, water, or compressed air, as set forth.

3. In devices for swinging the booms of derricks, a cylinder hung in pivotal bearings, the piston-rod of said cylinder being connected to the boom, in combination with a brake or snubbing device substantially such as described, whereby the derrick is under the full control of the operator at all times, as set forth.

4. In a device of the character described, the curved bar B', secured at one end to the boom B, the other end of said bar being passed through slots in the hanger C', and supporting-bar A', in combination with the brake-block *f*, lever E', and snubbing-bar *g*, as set forth.

In testimony whereof we affix our signatures in the presence of two subscribing witnesses.

THOMAS McBRIDE.  
EBENEZER FISHER.

Witnesses:

PETER McBRIDE,  
GEORGE McBRIDE.