

No. 677,874.

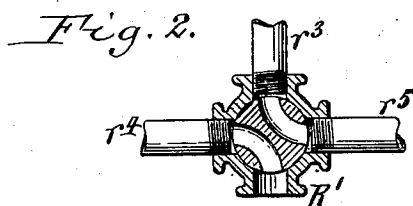
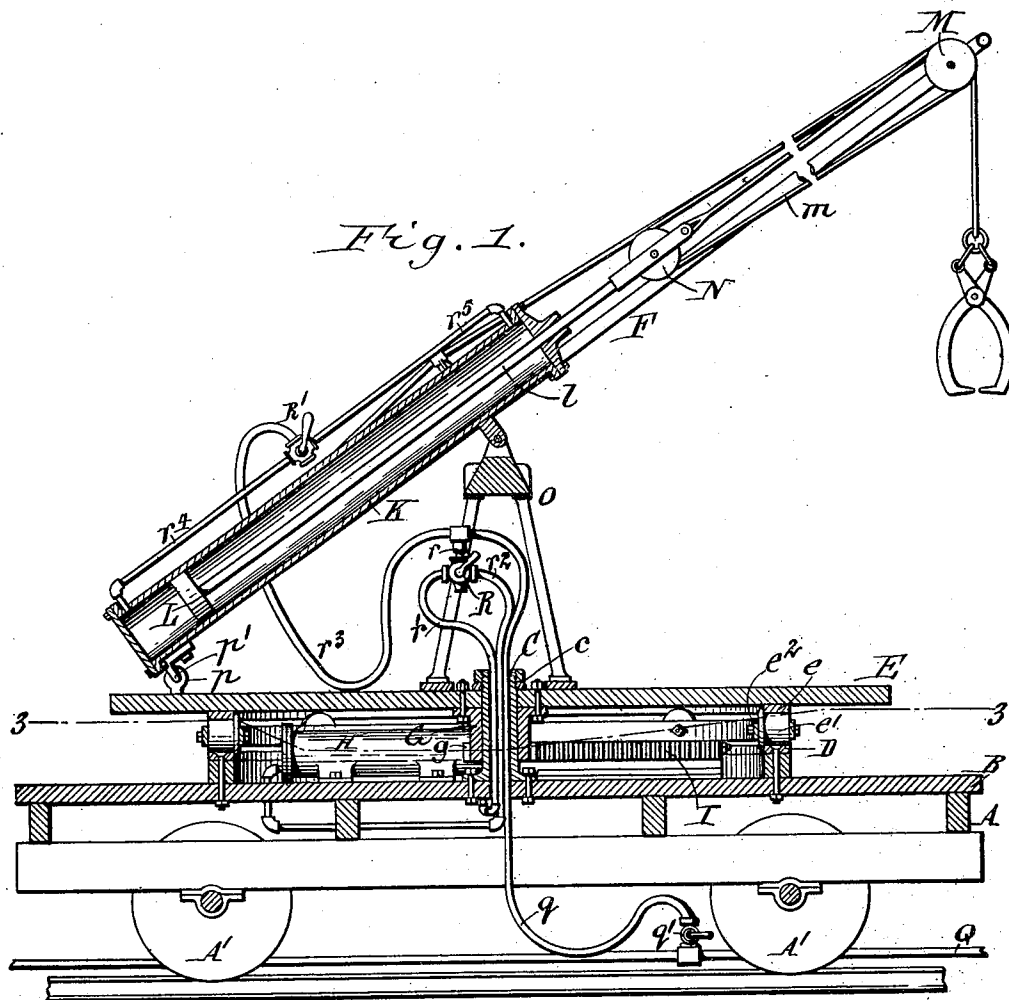
Patented July 9, 1901.

J. MACBETH.
HOISTING CRANE.

(Application filed July 23, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

E. A. Volk.

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2 Sheets—Sheet 2.

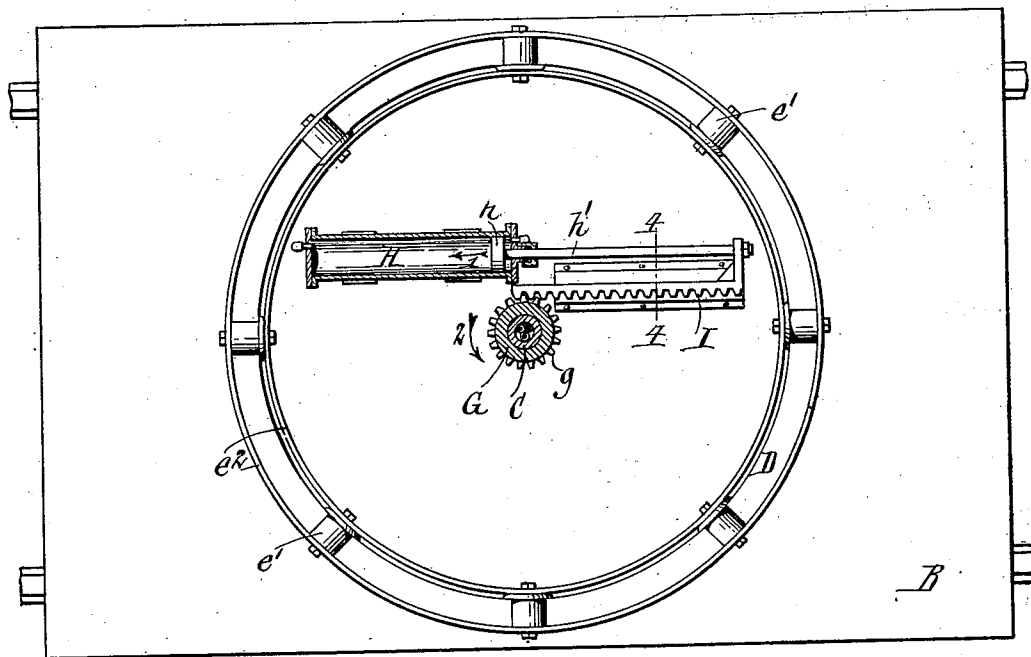


Fig. 3.

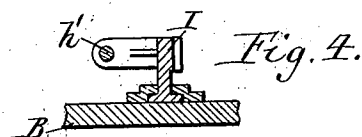


Fig. 4.

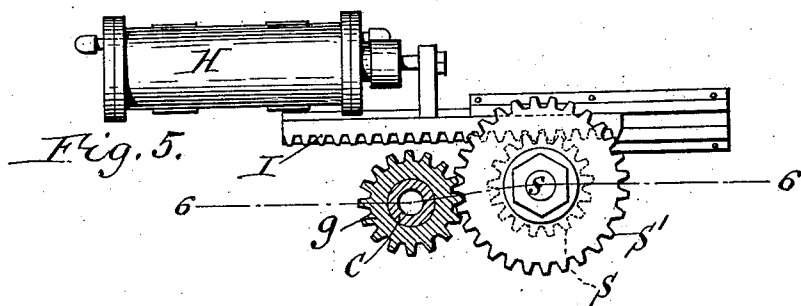


Fig. 5.

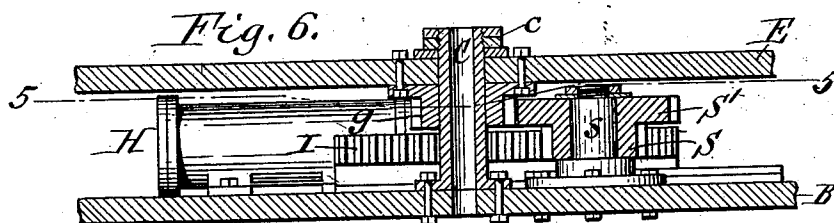


Fig. 6.

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UNITED STATES PATENT OFFICE.

JAMES MACBETH, OF BUFFALO, NEW YORK.

HOISTING-CRANE.

SPECIFICATION forming part of Letters Patent No. 677,874, dated July 9, 1901.

Application filed July 23, 1900. Serial No. 24,485. (No model.)

To all whom it may concern:

Be it known that I, JAMES MACBETH, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Hoisting-Cranes, of which the following is a specification.

This invention relates to that class of cranes in which the boom or jib is mounted upon a rotary platform.

The object of my invention is to provide such a crane with a power mechanism for swinging the boom or jib which is simple and compact in construction, which furnishes a comparatively large range of rotary movement for the boom, and which is housed in and protected in a simple manner.

In the accompanying drawings, consisting of two sheets, Figure 1 is a sectional elevation of a crane provided with my improvements. Fig. 2 is a sectional view, on an enlarged scale, of the four-way cock which controls the admission of fluid to and the exhaust from the cylinders. Fig. 3 is a horizontal section in line 3 3, Fig. 1. Fig. 4 is a vertical cross-section in line 4 4, Fig. 3. Fig. 5 is a top plan view, partly in section, showing a modified construction of the boom-turning mechanism, the section being taken in line 5 5, Fig. 6. Fig. 6 is a vertical section in line 6 6, Fig. 5.

Like letters of reference refer to like parts in the several figures.

A represents the frame, and A' the wheels, of a portable wheeled frame, car, or truck upon which the crane is mounted in the embodiment of the invention which is illustrated in the drawings and which is designed more particularly for use in railroad-yards for hoisting and conveying loads from cars to a warehouse, or vice versa.

B is the platform of the car or truck secured upon the frame A.

C represents a hollow pillar or arbor, which is secured centrally to the platform B and which projects upwardly therefrom.

D is a circular track, which is secured upon the platform B concentric with the arbor C.

E represents the rotary platform which supports the boom or jib F and which is journaled on the arbor C. The latter extends

above the rotary platform and is provided above the same with screw-nuts *c*, by which the rotary platform is held down. This platform is supported near its periphery upon the circular track D of the lower platform, preferably by a track *e*, which is secured to the under side of the rotary platform, and flanged rollers *e'*, which are interposed between the tracks D and *e* and mounted on an annular frame *e''*. The rotary platform is provided on its under side with a hub G, which turns on the arbor C and is formed at its lower end with a horizontal gear-wheel *g*.

H represents the horizontal actuating-cylinder of the boom-turning mechanism, which is arranged tangentially upon the lower fixed platform B and secured thereto. *h* is the piston, and *h'* the piston-rod, of this cylinder. The piston-rod extends through a stuffing-box at the inner end of the cylinder and is secured to a horizontal rack-bar I, which is arranged between the cylinder and the gear-wheel *g* and meshes with the latter. By driving the piston toward the outer end of the cylinder in the direction of the arrow 1, Fig. 3, the rack-bar is moved in the same direction and the gear-wheel *g*, which is secured to the rotary platform, is turned in the direction of the arrow 2. The rotary platform is turned in the same direction, while the cylinder remains stationary on the lower fixed platform.

The boom-turning mechanism being mounted on the lower platform within the circular tracks by which the upper rotary platform is supported near its periphery, the turning mechanism is housed in and protected, and the upper platform is left unobstructed, so that the operator can move freely on the same.

The boom or jib F may be of any desired construction and may be secured to the rotary platform by any desired means and may be provided with any desired hoisting mechanism. As shown in the drawings, the boom is provided in its lower portion with a hoisting-cylinder K, which is arranged lengthwise of the boom. L is the piston, and *l* the piston-rod, of this cylinder.

m is the hoisting-cable, which is secured to the end of the piston-rod and which runs from the latter upwardly and around a pulley M at the head of the boom and then back

and around a pulley N on the piston-rod and then around a pulley on one side of the head pulley M and down to the load. The boom is supported centrally on the rotary platform by a frame O, and the lower end of the boom is secured to the platform by an eye *p* and hook *p'* or other suitable means.

The pistons of the boom-turning cylinder H and hoisting-cylinder K are actuated by a fluid under pressure, compressed air being preferred.

q represents the flexible supply-pipe, which is attached to a cock *q'* on the fixed supply-pipe Q, arranged along the track on which the car rests. The flexible pipe *q* extends upwardly through the hollow arbor C and is attached to the boom-supporting frame O, where it is provided with a branch *r*, which carries a four-way cock R. The latter controls the admission of fluid to and the exhaust from the pipes *r'* *r''*, which lead to opposite ends of the cylinder H of the boom-turning mechanism. The pipes *r'* *r''* extend down through the hollow arbor and up through the lower fixed platform B to the cylinder H, as indicated in Fig. 1. The flexible supply-pipe *q* is provided in the frame O with a branch *r''*, which extends to a four-way cock R', arranged on the hoisting-cylinder K. This four-way cock controls the admission of fluid to and the exhaust from the pipes *r'''* *r''''*, which lead to opposite ends of the hoisting-cylinder.

In the modified construction of the boom-turning mechanism represented in Figs. 5 and 6 a multiplying-gear is interposed between the rack-bar and the gear-wheel on the rotary platform, so that a short stroke of the piston will produce a comparatively large rotary movement of the boom-platform. This multiplying-gear turns on a vertical arbors, which is secured upon the lower fixed platform, and consists of a pinion S, which meshes with the rack-bar, and a gear-wheel S', which is secured to or formed with said pinion and meshes with the gear-wheel *g* on the rotary platform.

A series of cocks *q'* are provided along the track, whereby the field of operation of the hoisting apparatus may be changed by disconnecting the supply-pipe *q* from one cock, moving the car into the vicinity of the next, and connecting said flexible pipe thereto.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means covered by any one of the following claims be employed.

I therefore particularly point out and distinctly claim as my invention—

1. The combination of a car, a rotatable platform supported thereon, a boom-support fixed to said platform, an inclined boom supported intermediately of its extremities upon said support, the lower end of said boom secured to said platform, a fluid-pressure cylinder secured to said car and provided with a piston operatively connected with said platform whereby the latter may be rotated thereby, and means for supplying pressure to said cylinder.

2. The combination of a car, a track, a rotatable platform supported thereon, a boom-support, an inclined boom supported intermediately of its extremities upon said support, the lower end of said boom secured to said platform, a fluid-pressure cylinder secured to said car and a piston operatively connected with said platform whereby the latter may be rotated thereby, a fixed pressure-supply pipe arranged along the track, and a flexible supply-pipe connecting said cylinder and fixed supply-pipe and disconnectible from the latter.

3. The combination with a fixed platform provided with a vertical arbor and with a circular track concentric with said arbor, of a rotatable platform having a central journal which turns on said arbor, a gear-wheel secured to said journal, rollers interposed between said platform and said circular track, an actuating-cylinder secured tangentially to said lower platform within said track, a piston arranged in said cylinder, a gear-rack connected with said piston and meshing with said gear-wheel, and a boom and hoisting mechanism mounted on said rotatable platform, substantially as set forth.

Witness my hand this 18th day of July, 1900.
JAMES MACBETH.

Witnesses:

THEO. L. POPP,
CLAUDIA M. BENTLEY.