

R. BRIGGS.

Cranes.

No. 140,882.

Patented July 15, 1873.

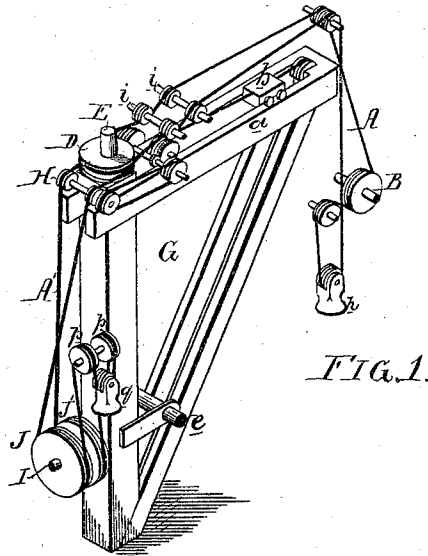


FIG. 1.

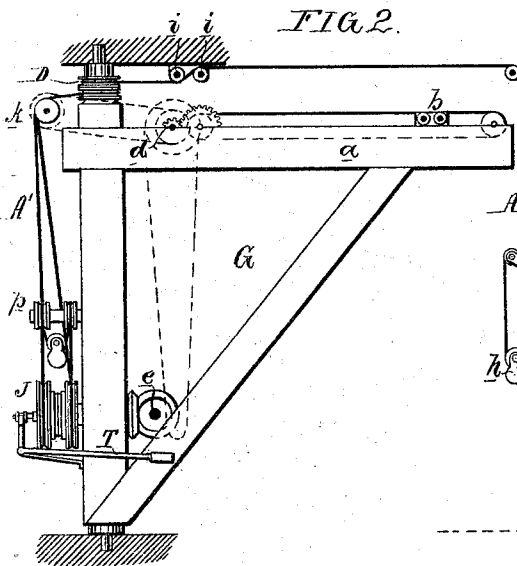


FIG. 2.

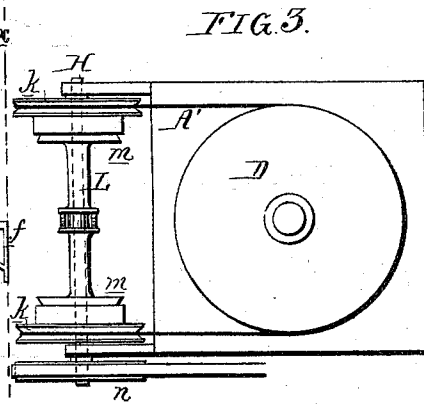


FIG. 3.

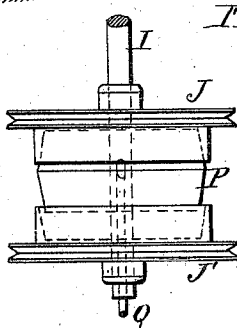


FIG. 4.

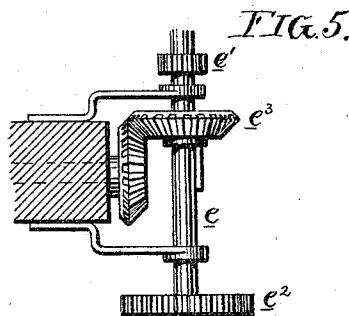


FIG. 5.

Witnesses, Harry Smith
Thomas H. Brown

Robert Briggs
by his Attys.
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UNITED STATES PATENT OFFICE.

ROBERT BRIGGS, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN CRANES.

Specification forming part of Letters Patent No. **140,882**, dated July 15, 1873; application filed June 26, 1873.

To all whom it may concern:

Be it known that I, ROBERT BRIGGS, of the city and county of Philadelphia, State of Pennsylvania, have invented certain Improvements in Cranes, of which the following is a specification:

The object of my invention is to operate the hoisting-gear, as well as the traversing-carriage, of a crane, from a shaft clear of the crane, and this object I attain in the manner best observed in the perspective diagram, Figure 1, of the accompanying drawing, in which—

A is an endless driving-rope passing round a pulley, B, on a driving-shaft adapted to fixed bearings clear of the crane, the rope taking the course indicated round a horizontal pulley, D, which is arranged to revolve freely on the upper pintle E of the crane G, a second endless driving-rope, A', passing round the same pulley D over guiding-pulleys on the shaft H, round pulleys J J' on the shaft I, through which motion is communicated to the hoisting-gear and chain-barrels, the carriage, with its blocks and tackle, being operated by gearing which derives its motion from the shaft H. The manner of reversing the gearing for operating the carriage, and for reversing the gearing for operating the chain-barrel, will be fully explained hereafter.

The crane G, to which my invention is applied, is similar to those used in iron foundries, and is pivoted below to a suitable foundation, and above to substantial framing connected to the roof and walls of the building, the jib *a* of the crane having the usual rails adapted to the wheels of the carriage *b*, to which the usual hoisting-tackle is suspended, the carriage being operated by gearing which it has not been deemed necessary to illustrate fully in the drawing, but of which *d* is the driving-shaft. (See side view, Fig. 2, of the accompanying drawing.)

As regards the chain-barrel, which is also omitted in the drawing as being common to cranes of this class, it will suffice to observe that it is driven through a suitable system of gearing from the transverse shaft *e*, Fig. 1, connected by bevel-wheels to the shaft I, before referred to. The main driving-shaft B is adapted to bearings on brackets *f* secured to

the wall *x x*, or to any fixed object in the building containing the crane, and the endless driving-rope A, which passes round the pulley B on the said shaft, is maintained in a proper tight condition by a weighted pulley, *h*, adapted to a loop made in the rope in a manner too clearly represented in Figs. 1 and 2 to need description. The pulley D, which, as before remarked, is arranged to turn freely on the upper pintle of the crane, has two grooves, one for receiving the endless driving-rope A, and the other for receiving the rope A'. In order to prevent the rope A from sagging and becoming twisted, I cause it to pass round guiding-rollers *i i*, as shown in Fig. 2. The driving-rope A' passes from the lower groove of the pulley D over pulleys K K, which are arranged to revolve freely on the shaft H, (see plan view, Fig. 3,) and each of these pulleys has a conically-recessed hub for receiving a friction-clutch, *m*, both clutches being secured to or forming a part of a sleeve, L, so adapted to the shaft H that it can be moved to and fro longitudinally, but cannot turn independently of the said shaft, the latter being furnished with a pulley, *n*, a strap from which passes round a pulley on the driving-shaft *d* of the gearing for operating the carriage *b*.

By suitable mechanism the sleeve L may be moved into gear with either of the pulleys K, or may be adjusted to a position where it is clear of both pulleys, and hence the carriage *b* may be traversed along the jib of the crane in either direction, and may be arrested at any point desired.

The direction of the driving-rope A', its passage round the pulleys J J', and over pulleys *p p* on the post of the crane, so as to form a loop for receiving a weighted pulley, are clearly indicated in Figs. 1 and 2 of the drawing. The pulleys J J' are loose on the shaft I, and, owing to the course of the driving-rope A', must turn in contrary directions. A friction-clutch, P, is arranged on the shaft I between these two pulleys, as shown in the detached view, Fig. 4, the shaft being made hollow for the reception of a spindle, *q*, to be operated by a lever, T, Fig. 2, and the spindle being so connected to the clutch that the latter, which turns with the shaft, can be moved into gear with either of the pulleys, or clear

of both pulleys, so that by simply manipulating the lever *T* the chain-barrel may be caused to turn in either direction, or may be entirely or partially freed from the control of the driving-rope. The shaft *e*, (see Fig. 5,) from which motion is communicated to the hoisting-barrel on an adjoining shaft, is arranged to be moved longitudinally in its bearings, so as to bring either the small cog-wheel *e*¹, or large wheel *e*², into gear with wheels on the barrel-shaft, according as the latter has to be driven at a slow or fast rate of speed, the said shaft *e* sliding through, but being prevented from moving, independently of its driving bevel-wheel *e*³, as shown.

I claim as my invention—

2. The combination, with a crane, of a double-grooved pulley, *D*, deriving its motion from a driving-pulley clear of the crane, through the medium of an endless rope, *A*, and having its motion transmitted through another endless rope, *A'*, to the driving-gear of the hoisting mechanism, all substantially as set forth.

2. The combination of the shaft *H*, its pulleys serving as guides for the rope *A'*, and the

clutch mechanism described, or its equivalent, with the driving-shaft *d* of the gearing for operating the carriage.

3. The combination of the pulley *D* on the pivot of the crane, and the endless rope *A'*, with the pulleys *J J'* on the driving-shaft *I* of the hoisting-gearing, and the clutch mechanism described, or its equivalent.

4. The rope *A'* formed into a loop for carrying a weighted pulley, *q*, by causing it to pass from the pulleys *J J'* over the pulleys *p p*, in the manner set forth.

5. The combination of the driving-shaft *e*, and its gear-wheels *e*¹ and *e*², with the driving bevel-wheel *e*³, through which the said shaft can slide without turning, independently of the same, all substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBT. BRIGGS.

Witnesses:

WM. A. STEEL,
HUBERT HOWSON.