

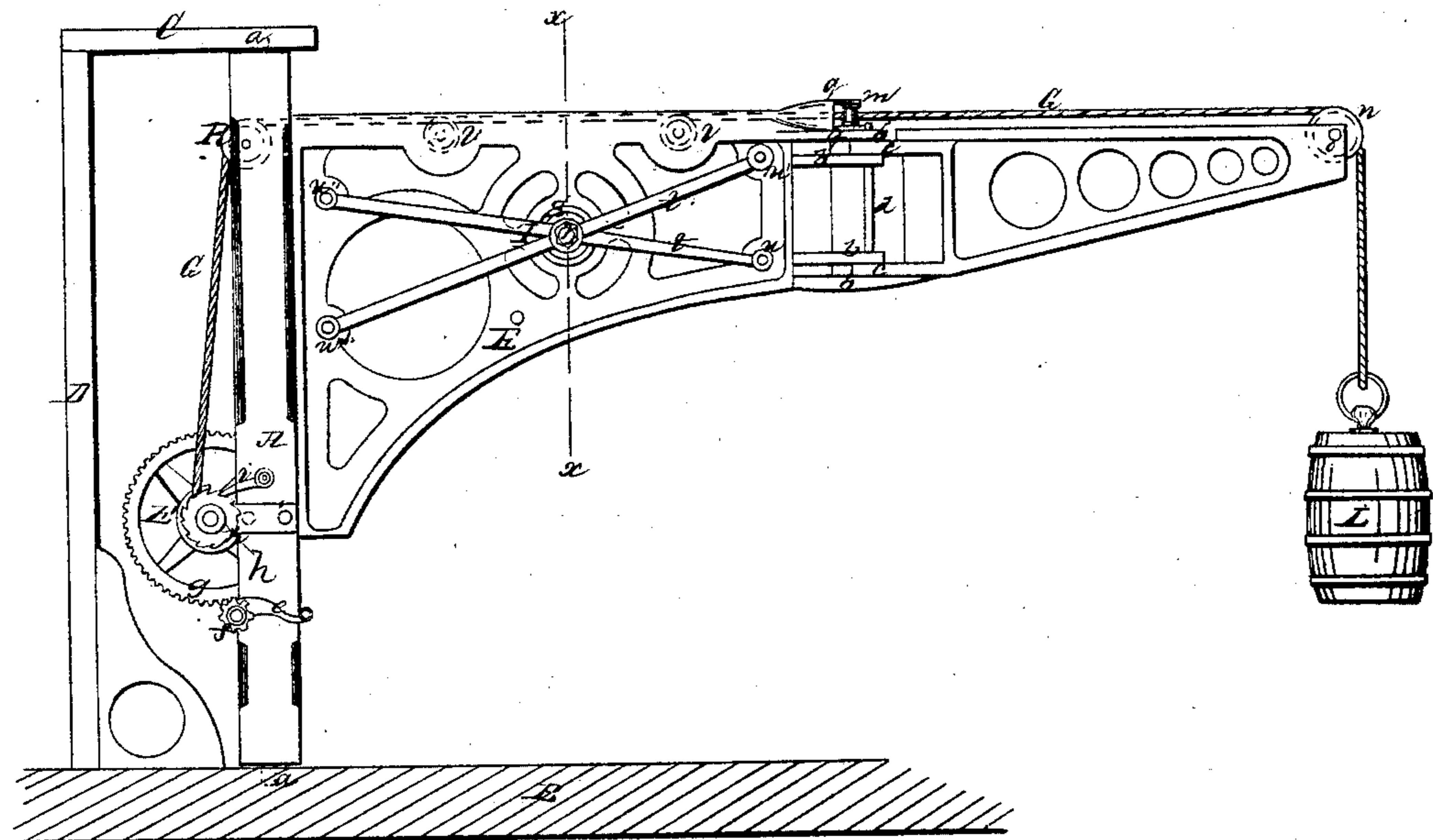
*J. V. PACE,*

*Derrick.*

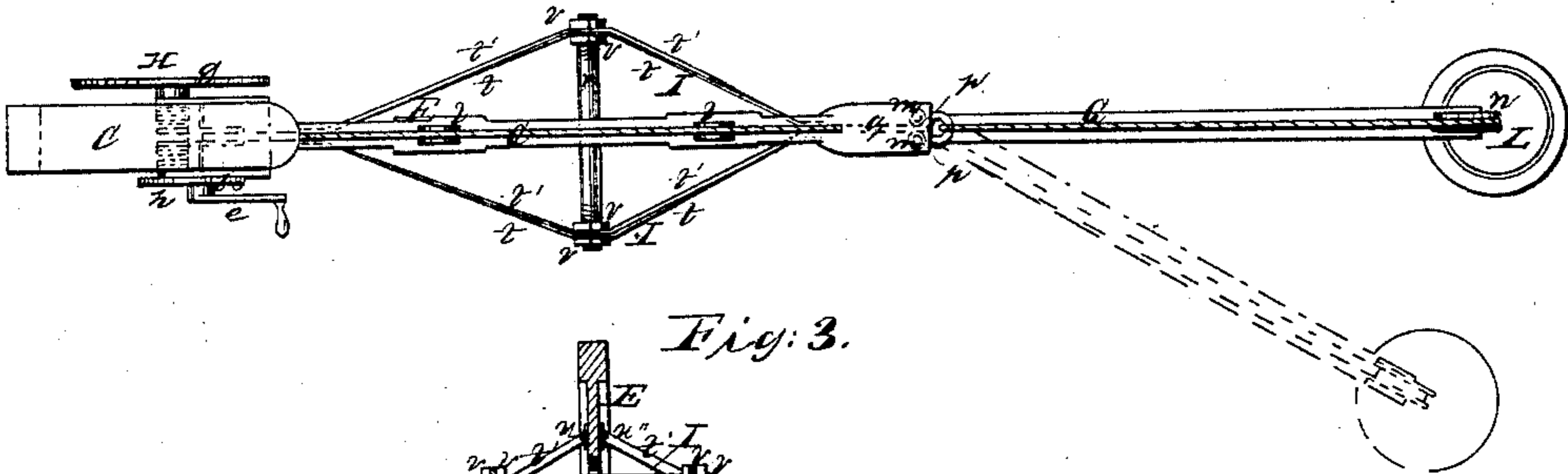
*N<sup>o</sup> 24,912.*

*Patented July 26, 1859.*

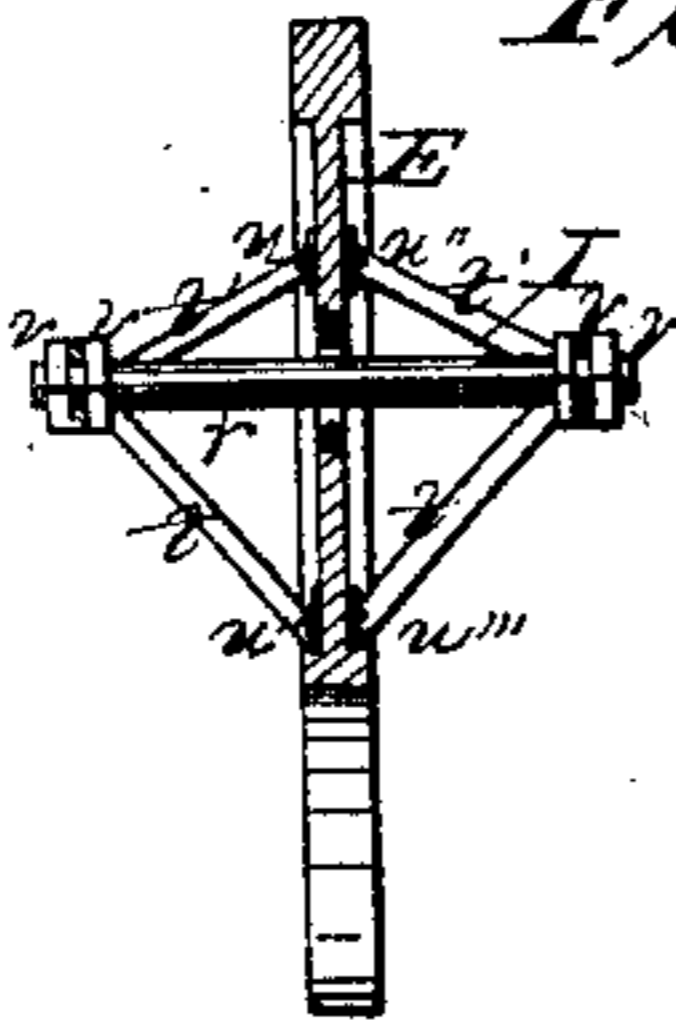
*Fig: 1.*



*Fig: 2.*



*Fig: 3.*



Witnesses:

*James Collins*  
*Wm. McKinnon*

Inventor:

*J. V. Pace*

# UNITED STATES PATENT OFFICE.

J. Y. PARCE, OF FAIRPORT, NEW YORK, ASSIGNOR TO HIMSELF AND D. B. DE LAND, OF  
SAME PLACE.

## HOISTING-CRANE.

Specification of Letters Patent No. 24,912, dated July 26, 1859.

*To all whom it may concern:*

Be it known that I, J. Y. PARCE, of Fairport, in the county of Monroe and State of New York, have invented a new and Improved Hoisting-Crane; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, represents a side elevation of a hoisting crane constructed according to my invention. Fig. 2, is a plan or top view of ditto. Fig. 3, is a transverse vertical section of the arm and its braces, the line  $x, x$ , in Fig. 1, indicating the plane of section.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in arranging the jointed arms of a crane in such a manner, by means of the particular form of the pin which joins the same, and by rollers and braces, that the weight may be hoisted up or let down equally well in whatever direction the end of the jointed arm may be turned and that the strain exerted by the weight on the main arm is brought to bear on that part of the same where it joins the post, on whatever side the end of the jointed arm to which the weight is attached, may be turned.

To enable others skilled in the art to fully understand, construct and use my invention, I will proceed to describe it.

A, is a post of wood which turns on pivots  $a$ , in the bed plate B, and in the arm C, which is rigidly attached to a standard D, and firmly secured to this post is the main arm E, to which another arm F, is jointed by means of ears  $b$ , and  $c$ , which are united by a pin  $d$ . This pin is oval fitting closely in the eyes in the ears  $b$ , of the main arm which have the same shape, while the eyes in the ears  $c$ , of the jointed arm F, are round, so as to fit loosely over the pin  $d$ , when in line with the main arm, but when at right angles thereto, this arrangement prevents a deflection of the outer end of the jointed arm F, under a heavy weight. The rope G, winds up on a windlass H, which is secured to the lower part of the post A, and which is operated by means of a handle  $e$ , and by the gear wheels  $f$ , and  $g$ , in the usual manner, and a ratchet wheel  $h$ , together with a pawl  $i$ , serve to prevent the windlass from going back spontaneously by the strain

exerted on the same by a weight which is suspended from the rope. From the windlass H, the rope extends over the roller K, which works in a mortise in the upper end of the post A, and over the rollers  $l$ , on the upper edge of the main arm E, through between the friction rollers  $m$ , to the roller  $n$ , which turns on a pivot  $o$ , in the front end of the jointed arm F. The friction rollers  $n$ , turn on vertical pivots  $p$ , between two ears  $q$ , which are rigidly attached to the outer end of the main arm E, and these rollers leave just room enough between them for the rope G, to pass through.

The main arm E, is strengthened by means of double diagonal braces I, which are united by a stay  $r$ , which passes freely through an aperture  $s$  in the arm E, without touching any part of the same, and the several arms  $t$ , and  $t'$ , are rigidly attached to the arms by means of bolts or rivets  $u$ ,  $u'$ ,  $u''$  and  $u'''$ , as clearly represented in Fig. 1, and all the arms  $t$ ,  $t'$ , are secured in the center to the stay  $r$ , by means of nuts  $v$ , as clearly represented in Figs. 2 and 3. Attached to the outer end of the rope G, is the weight L, which is to be hoisted and moved from place to place by means of the crane.

The operation is as follows. When the jointed arm F, is in line with the arm E, the operation is the same as with a crane constructed in the usual manner, but if the jointed arm be brought under a certain angle with the arm E, as represented in dotted lines in Fig. 2, the rope is guided by the friction rollers  $m$ , so as to pass from the roller  $n$ , without fail to the rollers  $l$ , and over the roller K, to the windlass, and the strain exerted by the weight on the arm E, and which under ordinary circumstances would have a tendency to twist the same, is divided by means of the diagonal braces I, in such a manner that the same (the strain) is brought to bear entirely on that part of the main frame where it joins the post A. For if the weight be brought into a position as represented in dotted lines in Fig. 1, the strain exerted by the same on the main arm E, has a tendency to twist the outer end of the same so as to turn the bolt  $u'$ , out, (Fig. 1) and the bolt  $u$ , in, but any strain which has a tendency to twist the outer end of the main arm E, in this direction, is brought to bear on the bolts  $u'''$ , and  $u''$ , by means of the arms  $t$ , and  $t'$ , of the brace

I, and as the stay *r*, passes freely through the aperture *s*, in the main arm E, any little motion of the braces *t*, and *t'*, has no effect on the central part of the arm. If the arm 5 F, be turned out on the other side of the straight position or under a different angle from the one represented in dotted lines in Fig. 2, the effect on the arm E, will be the same and the rope G, will under all circum- 10 stances work with equal facility as the rollers *m*, prevent it from coming off the rollers *l*, and *h*. With a very heavy weight and when the jointed arm F, is brought to stand at right angles to the main arm, the 15 strongest braces can not prevent a small deflection of the outer end of the jointed arm. With a full sized crane this deflection amounts to 3 inches; and if it is now desired to straighten out the crane or to shut it up, 20 force is required to raise the weight 3 inches besides what is necessary to overcome the friction in the joint. This evil has been remedied by making the pin, *d*, oval or flat,

placing its minor axis in line with the main arm, and its major axis at right angles with 25 the same, so that, as the crane is straightened, the end of the jointed arm sinks down when not loaded, and when loaded the weight has not to be raised, no more power being required to straighten the crane or to 30 shut it up with the heaviest load on, than what is necessary to overcome the friction in the joint.

What I claim as new and desire to secure by Letters Patent, is— 35

The main arm E, of a crane arranged with the double diagonal braces I, and with the guide rollers *m*, to operate in combination with the arm E, jointed to the same by means of the oval pin *d*, substantially as and 40 for the purpose set forth.

J. Y. PARCE.

Witnesses:

JAMES COLLINS,  
WM. M. NEWMAN.