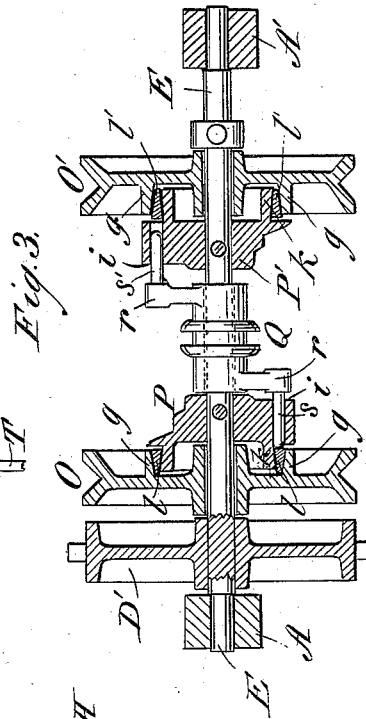
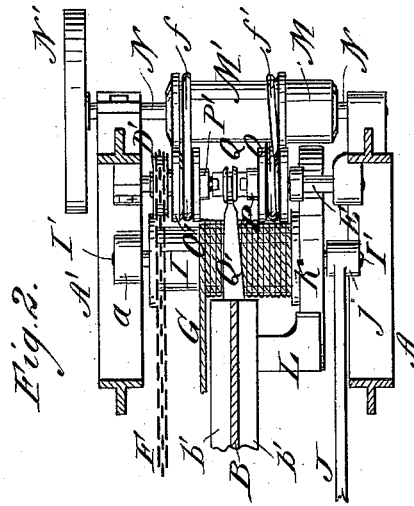
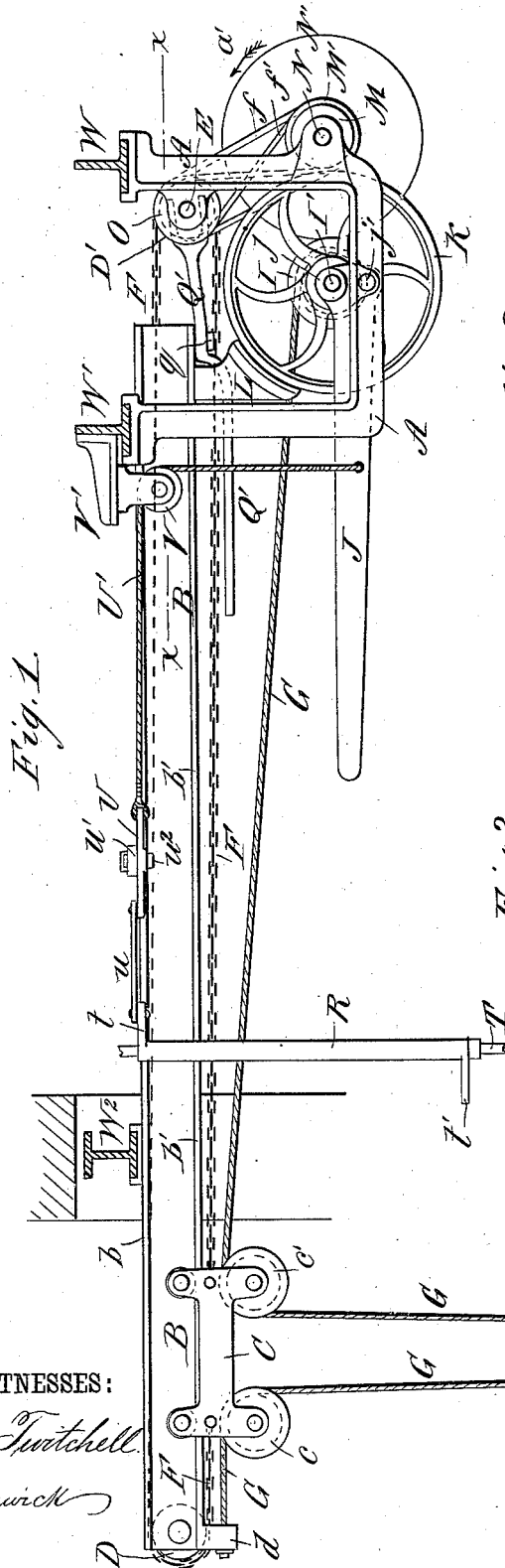


(No Model.)

J. WILD.
CRANE.

No. 307,611.

Patented Nov. 4, 1884.



WITNESSES:

Dorm Twitchell
C. Sedgwick

INVENTOR:

BY

J. Wild
Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN WILD, OF CHESTER, PENNSYLVANIA.

CRANE.

SPECIFICATION forming part of Letters Patent No. 307,611, dated November 4, 1884.

Application filed March 1, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN WILD, of Chester, in the county of Delaware and State of Pennsylvania, have invented a new and useful Improvement in Cranes, of which the following is a full, clear, and exact description.

The object of this invention is to improve the efficiency and construction of that class of cranes wherein the hoisting-block is arranged to travel along the crane-beam for shifting the load; and the invention consists of the construction, arrangement, and combination of parts, all as hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of my new and improved crane, the same being shown suspended from the ceiling of a building by suitable hangers. Fig. 2 is a sectional plan view of the same, taken on the line *x.x* of Fig. 1; and Fig. 3 is a detailed sectional elevation showing the clutch mechanism and the pulleys for moving the hoisting-block backward and forward upon the crane-beam.

The frame in which the main operative parts of the crane are housed is composed of the two U-shaped side castings, A A'. These castings are essentially duplicates of each other, and in this instance are suspended from the ceiling by the hangers W W'.

B is the crane-beam, suspended near its forward end from the ceiling by the hanger W², and attached at its rear end to the hanger W'. The hangers W W' in most cases form a part of the main housing-frame of the crane, being rigidly secured to the upper ends of the side castings, A A', thus acting as tie-plates to the said side castings. The crane-beam B is formed with the upper strengthening-flange, *b*, and lower flange, *b'*, on which latter the hoisting pulley-block C travels.

At the forward end of the crane-beam B is journaled the sprocket-wheel D, over which and over the sprocket-wheel D', secured rigidly upon the shaft E, passes the chain F, which is secured at its ends to the ends of the pulley-block C, and to the forward end of the beam B is attached also the hoisting-rope G, which

passes from the lug *d*, to which it is attached, over the pulley *c*, journaled in the traveling block C; thence under the pulley H, which carries the hook *h*; thence over the other pulley, *c'*, of the traveling block C; thence around the winding-drum I, made fast to the shaft I', journaled at one end in the lug *a*, formed on the side casting, A', and at the other end in the sleeve *j*, formed at the angle of the angle-lever J, which is fulcrumed below the sleeve *a* upon the pin or stud *j'*, attached to or formed upon the side casting, A.

Upon the shaft I', at one end of the winding-drum I, is fixed the friction-wheel K, which is of a diameter slightly less than the width of the space between the brake-shoe L, attached to or formed upon the rear end of the crane-beam B and the friction-wheel M, fixed upon the main power-shaft N, so that by raising the outer free end of the lever J the periphery of the wheel K will be carried against the friction-wheel M, and by lowering the outer end of said lever J the said wheel K will clear the wheel M and press against the brake-shoe L. The friction-wheel M is by preference made of considerable length, so as to form also the broad pulley M', over which passes the belt *f*, and also the crossed belt *f'*, which belts pass from the said broad pulley M' respectively over the grooved pulleys O O', placed some distance apart and loosely upon the shaft E, on which is secured the sprocket-wheel D', as above mentioned. The pulleys O O' are duplicates of each other, each being formed upon the inner surface with a circular flange, *g*, which is beveled upon the inner surface, as shown clearly in Fig. 3. Next to the inner surfaces of the pulleys O O' are secured, upon the shaft E, the yokes P P'. These are also duplicates of each other, each being formed with the passage *i*, and with the circular flange *k* of smaller diameter than the flanges *g* on the pulleys O O', and these flanges *k* are beveled upon their outer surfaces opposite to the bevel of the inner surfaces of the flanges *g*, and the yokes P P' are attached to the shaft E, so that the flanges *k k* run concentric to and within the flanges *g g*, thus forming V-shaped annular spaces between the flanges *g k*, and in these V-shaped spaces are placed the loose clutching wedge-rings *l l'*, which are made

slightly less in width than the flanges *k*, as shown in Fig. 3, so that they are adapted to move backward and forward upon the flanges *k*, for clutching the pulleys *O O'* to and releasing them from the yokes *P P'*. In the arrangement of the present machine the two wedge-rings *l l'* must be moved alternately both forward and backward upon the flanges *k*, to alternately clutch and alternately release the pulleys *O O'*, for making them alternately fast and loose pulleys upon the shaft *E*; and for moving the said wedge-rings to cause them to effect their purpose I place loosely upon the shaft *E*, between the yokes *P P'*, the shipper *Q*, which is formed with the arms *r r* and pins *s s'*, and is adapted to be moved upon the shaft *E* by the lever *Q'*, pivoted at *q* to the crane-beam *B*, the pins *s s'* being arranged to enter, and of such length as to reach through, the passages *i i* in the yokes *P P'*, so that they are adapted to alternately press forward the rings *l l'* as the shipper *Q* is shifted to one side and the other by the lever *Q'*, as will be clearly understood from Fig. 3. As soon as the shipper-pins cease to bear against the clutching-rings the said rings will, owing to the inclination of the flanges *g k* on the yokes and pulleys, move backward, thereby releasing the pulleys.

For raising the outer end of the lever *J*, I employ the sleeve *R*, formed with the crank *t* at its upper end, and the lever *t'* at its lower end, and journaled upon the upright stationary rod *T*, the arm *t* being connected by the link *u* to one end of the plate *U*, pivoted to the plate *u'*, which is pivoted upon the stud *u''*, formed upon or secured to the crane-beam *B*, the other end of the said plate *U* being attached to the lever *J* by the rope or chain *U'*, which passes over the pulley *V*, journaled in the arm *V'*, attached to the hanger *W'*, as shown in Fig. 1, so that by simply turning the sleeve *R* by the lever *t'*, which may be done from the floor of the building, the arm *t*, acting through link *u*, plate *U*, and rope *U'*, will draw the outer end of the lever *J* upward, which movement will carry the shaft *I'* backward until the friction-wheel *K* comes against the friction-wheel *M*, as above mentioned.

By releasing the lever *t'* of the sleeve *R* the weight of the lever *J* will carry the shaft *I'* forward. This movement will move the wheel *K* out of contact with the friction-roller *M* and bring it in contact with the brake-shoe *L*. The action of the crane is as follows: Power being applied to the main shaft *N* by a belt coming from any suitable motor and passing over the pulley *N'*, secured upon the main shaft *N*, and the hook *h* having been lowered to and attached to the object to be lifted, the sleeve *R* will be turned by the attendant to the right or left, which will raise lever *J*, and cause the winding-drum *I* to be turned by the frictional contact of the friction-wheel *K* with the friction-wheel *M*, which motion of the winding-drum will wind up the hoisting-

rope *G* and raise the load. The load having been in this manner raised to the proper height, if it is to be shifted along the crane-beam *B*, the sleeve *R* will be suddenly released by the attendant, which will bring friction-wheel *K* from wheel *M* against the brake-shoe *L*, so as to hold the drum from turning, and then the forward end of the lever *Q'* will be moved to the right or left, as the case may require. If the load is to be carried toward the rear end of the crane-beam *B*, the handle end of the lever *Q'* will be moved to the right, (as the attendant faces the winding-drum,) which will cause the shipper *Q* to be shifted on shaft *E*, and cause the pin *s'* of the shipper to shove the clutch-ring *l'* forward, causing it to make pulley *O'* fast to the yoke *P'*. This will cause belt *f* to revolve shaft *E* and sprocket-wheel *D'* in the direction of the arrow *a'*, which will operate chain *F*, so as to draw the hoisting-block *C* backward, which backward movement of the block allows the rope *G* to pass over the pulleys of the block and under the pulley of the lifting-hook. If the load is to be carried toward the outer end of the crane-beam, the lever *Q'* will be moved to the left, which will move shipper *Q* in the opposite direction on shaft *E*, and cause pin *s* thereof to shove forward clutch-ring *l*, causing it to make pulley *O* a fast pulley upon yoke *P*, which will cause cross-belt *f'* to revolve the shaft *E* and sprocket-wheel *D'* in the opposite direction, which will operate chain *F* and cause it to move the pulley-block *C* outward upon the crane-beam *B*. The load having been thus shifted to the proper position to lower it, the attendant will first center the lever *Q'*, causing both pulleys *O O'* to run loose upon the shaft *E*, and then turn sleeve *R* to raise lever *J* slightly, to diminish the friction of the wheel *K* upon the brake-shoe *L*, so that the load may gradually be lowered to the floor. In this manner it will be seen that the main power-shaft *N* is revolved continuously in the same direction, and does not require to be reversed, the required reverse motion being accomplished by the movement of the levers *J Q'*. This avoids the necessity of reversing the motive power, which is a great objection to the cranes in use, and furthermore the crane is very efficient and practical, and may be operated with great ease and rapidity.

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

1. The pulleys *O O'*, formed with inwardly-projecting beveled flanges *g*, combined with the yokes *P P'*, formed with oppositely-beveled flanges, and the wedge-rings placed between the flanges and adapted to be moved edgewise between the flanges for clutching the pulleys and yokes together, substantially as and for the purposes set forth.

2. The shipper *Q*, formed with the arms *r r* and pins *s s'*, in combination with the flanged yokes *P P'*, flanged pulleys *O O'*, and the mova-

ble rings *l l'*, arranged between the flanges of the pulleys and the yokes, substantially as and for the purposes set forth.

3. In a crane, the shaft *E*, provided with
5 sprocket-wheel *D'*, loose pulleys *O O'*, and clutch and shipping mechanism, in combination with the main power-shaft *N*, adapted to impart reverse motion to the pulleys *O O'*, the chain *F*, and traveling block *C*, all arranged
10 to operate substantially as and for the purposes set forth.

4. The combination, with the lever *J*, arranged to shift the drum-shaft *Y'*, of the rope *U'*, pulley *V*, pivoted plate *U*, link *u*, and the sleeve *R*, formed with the arms *t t'*, and arranged for raising the outer end of the lever *J*, substantially as and for the purposes set forth. 15

JOHN WILD.

Witnesses:

LIZZIE LARKIN,
CHAS. C. LARKIN.