J. DORMAN.

Crane.

No. 160,513. Patented March 9, 1875.

Fig. 1

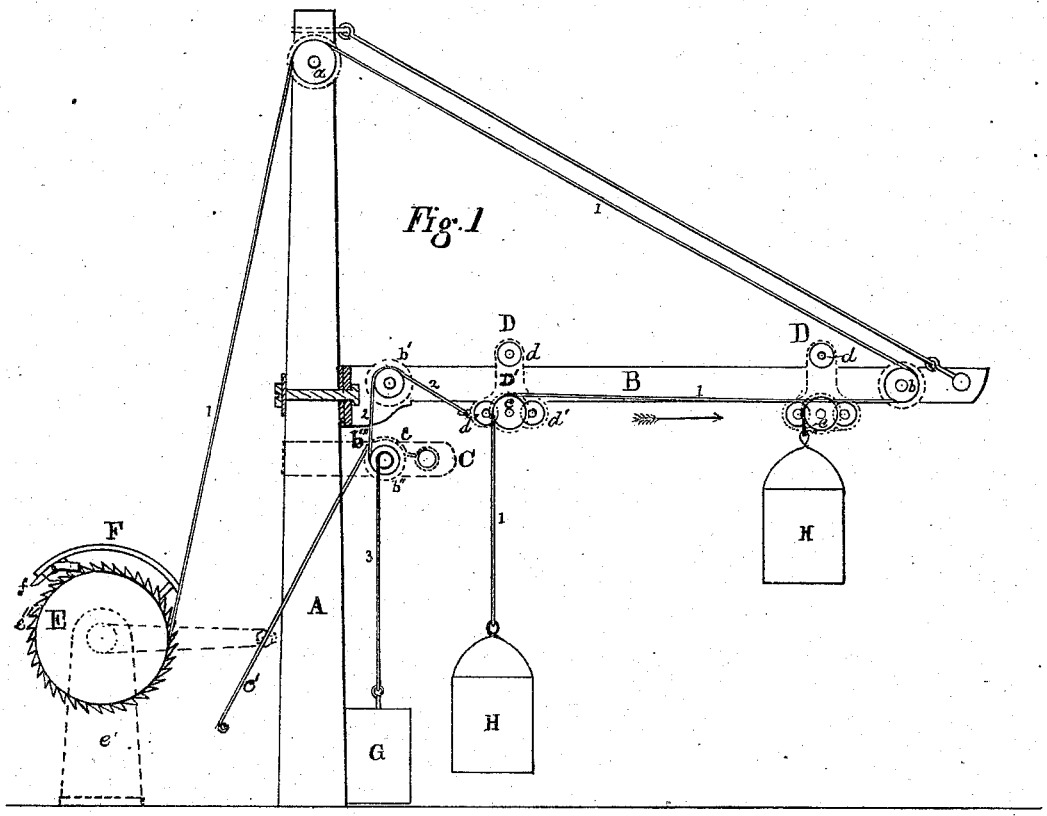


Fig. 2.

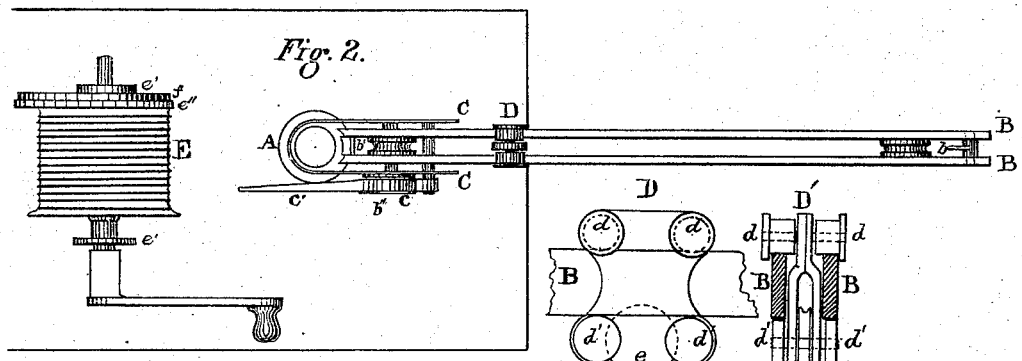
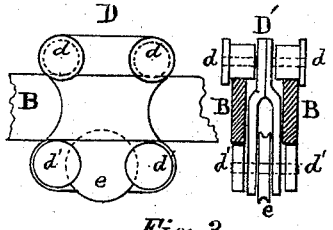


Fig. 3.



Attest

C. M. Connell

E. A. Bradley

Inventor

Jerry Dorman

Per Blanchard & Singleton

Attorneys

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

JERRY DORMAN, OF GEORGETOWN, DISTRICT OF COLUMBIA.

IMPROVEMENT IN CRANES.

Specification forming part of Letters Patent No. **160,513**, dated March 9, 1875; application filed February 20, 1875.

To all whom it may concern:

Be it known that I, JERRY DORMAN, of Georgetown, in the county of Washington and District of Columbia, have invented certain new and useful Improvements in Cranes; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a side elevation of the crane, with one arm removed to show the arrangement of the cords, traveler, and pulleys. Fig. 2 is a top view, and Fig. 3 details and cross-sections on line *x x* of Fig. 1.

A is a mast, upon which the arms and axle-frame are securely fastened, and which is properly bedded in the wharf or other foundation, and braced so that it will be always in a vertical position. B B are two arms extending from the mast, and placed at such a distance apart as to accommodate the sheave D′, which carries the proper pulley *e* for operating the hoisting apparatus, as also turning pulleys *b* and *b′*. C C is a frame for the support of the pulley *b‴* and axle *b″*, to which are suspended the actuating counter-weight G and the cord 2 for operating the traveler D inwardly. D is a traveling-car, to which is suspended the coal-bucket H by cord No. 1. *d d* represent flanged truck-wheels, (one only seen in Fig. 1; but two such may be used, as in the modification of D, Fig. 3,) which travel on top of the arms B B. *d′ d′* are plain wheels under the arms to act as friction-wheels. In D is a pulley, *e*, over which cord No. 1 is carried down to the coal-bucket. E is a spirally-grooved drum supported in a proper frame, *e′ e′*, and is worked either by a handle or upon a shaft, upon which may be as many similar drums as there are cranes to be operated, in which event each drum is to be thrown into or out of gear by a friction-clutch in the usual manner, each drum having a proper ratchet, *e″*, and pawl *f*. F is the frame supporting the pawl *f* attached. G is a weight supported by cord No. 3 to the axle *b″* in the frame C C. H is the coal-bucket supported by cord No. 1, which passes over pulley *e*, thence under and over pulley *b* at the outer end of arms B B, thence to the pulley *a* in top of the mast A, and down to drum E. Traveling-car D has a loop on the inner end, to which is fastened cord No. 2, which passes over pulley *b′*, and thence down to pulley *b‴*, and on which it is wound around and secured. Axle *b″* has secured to it a cord No. 3, which supports the weight G. There is a friction-brake, *c*, with handle *c′*, by which the axle *b″* may be held to suspend the weight G, or to prevent its elevation.

In practice the brake is so arranged that it is held in action normally, and the attendant releases it by placing his foot upon a treadle. This is not shown in the drawing, but may be employed in connection with this apparatus.

The operation of this device is as follows: The weight G is heavier than the empty bucket H, but much lighter than the bucket when loaded. Now, when the coal is to be lifted and carried outwardly, the cord No. 1, being operated by the drum E acting over pulleys *a* and *b*, will elevate the bucket by acting also over pulley *e* in the traveling-car D, which, being free to move, will be pulled, in direction of the arrow, toward pulley *b*, as seen in Fig. 1 at H′, and at the same time the cord No. 1 will elevate bucket H to its position at H′, and as cord No. 2 is attached to car D, and acting over pulley *b′* will unwind itself from pulley *b‴*, and wind around axle *b″* cord No. 3, and pull up weight G. The proportion between the diameters of pulley *b‴* and axle *b″*, weight G, and distance to which car D is to be moved horizontally outward, and the height to which weight G is to be elevated, are so determined as to economize power, according to the position and purposes for which the crane is to be employed. The weight of bucket H when loaded, and when pulled outwardly, draws up weight G, and stores up therein a power which will act inwardly, and draw the bucket back when the load has been discharged. This arrangement of traveling car and weight facili-

tates the operation of loading or unloading two or more vessels which are placed side by side.

Having described my invention, what I claim is—

1. In a crane for hoisting coal and other materials, a winding-drum, cords and pulleys, traveling-car and counter-weight, arranged, substantially as described, to elevate the loaded bucket, and its outward movement shall elevate the weight, which will retract the car when the bucket is emptied.

2. The combination of the traveling-car D, cords 2 and 3, pulleys b' b''', and axle b'', and weight G, substantially as and for the purpose described.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

JERRY DORMAN.

Witnesses:
W. R. SINGLETON,
C. M. CONNELL.