D. BROBSTON.

HOISTING APPARATUS.

No. 190,276. Patented May 1, 1877.

Fig. 1.

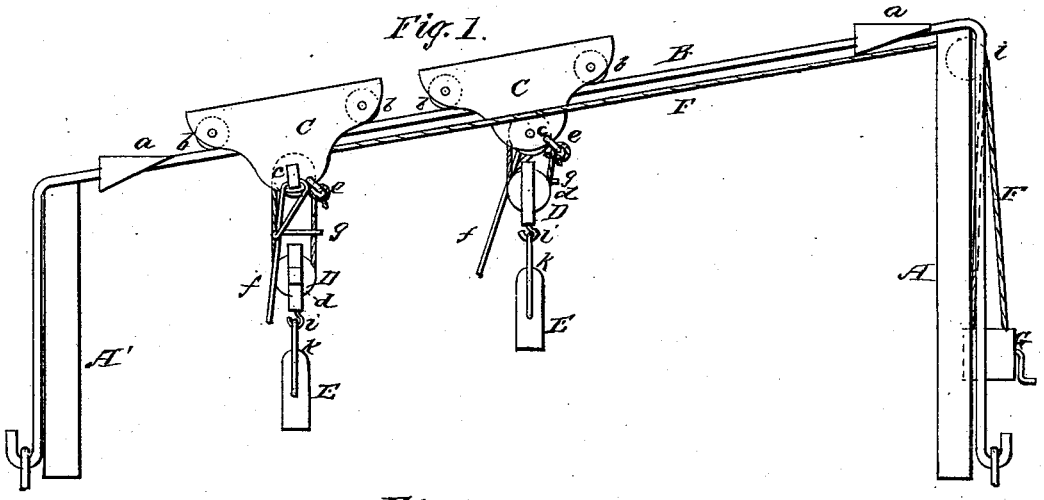


Fig. 2.

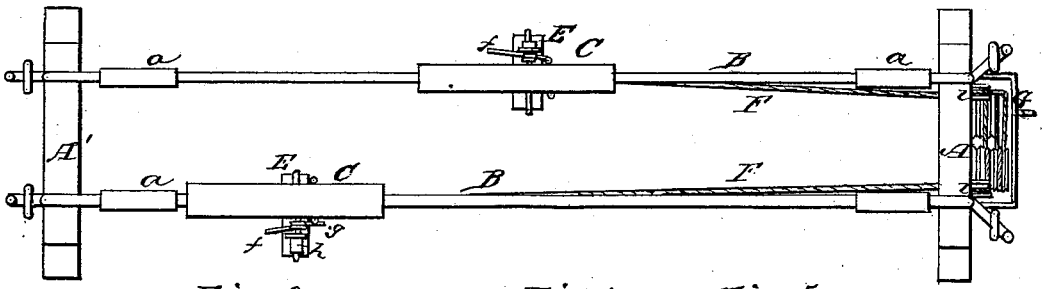


Fig. 3.

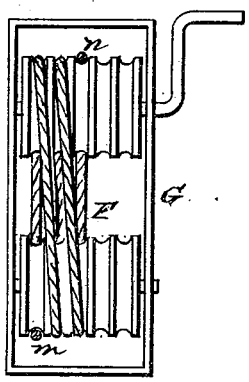


Fig. 4.

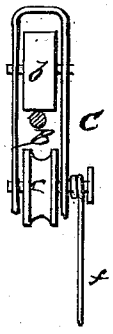
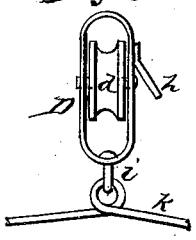


Fig. 5.



WITNESSES:

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DAN BROBSTON, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN HOISTING APPARATUS.

Specification forming part of Letters Patent No. **190,276**, dated May 1, 1877; application filed August 9, 1875.

To all whom it may concern:

Be it known that I, DAN BROBSTON, of the city of Chicago, Cook county, State of Illinois, have invented new and useful Improvements in Hoisting Apparatus, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation; Fig. 2, a top or plan view; and Figs. 3, 4, and 5, details.

The object of this invention is to construct an apparatus which will elevate the material to be carried in a vertical direction, and carry it, in the same bucket or receptacle which elevated it, to the desired distance away from the point of elevation; and its nature consists in certain improvements in the carriage, in the supporting apparatus for the bucket or receptacle, in the arrangement of the cords, and in the cylinders or windlass for driving the cord.

In the drawings, A A′ represent either permanent or movable derricks or frame-work for giving the traveling-ropes the necessary elevation; B, the traveling-ropes; C, the carriage; D, the pulley-blocks; E, the buckets or receptacles; F, the operating cord or rope; G, the windlass or cylinders; *a*, the locks or stops on the traveling-ropes; *b*, the pulley or carriage wheels; *c*, a sheave in the carriage below the traveling-rope B; *d*, a sheave in the pulley-block D; *e*, the points of attaching the cord F to the carriages; *f*, the hinged brackets or supporting-levers; *g*, projection thereon; *h*, projection or hook on the side of the pulley-block D; *i*, hook for attaching the bucket E; *k*, supporting-bail of the bucket or receptacle E; and *l*, friction rollers or pulleys.

The frames or derricks A A′ may be made of any suitable form, and stationary when the apparatus is to be used in a fixed position; but for general purposes it will be preferable to make them so that they can be moved and adjusted as to height. The traveling-ropes B are made of ordinary wire-rope, and secured to the platform or ground at or near the base of the derricks, as may be most convenient. The derrick A may also, if desired, be supported by guys.

The apparatus is designed for taking coal from the holds of vessels and delivering it back into the yard. For this purpose the derrick A′ will be located on the deck of the vessel; or some equivalent device may be attached to the masts or other parts of the vessel. When used for this purpose the lower locks or stops *a* are applied so as to pass the bucket down through the hatchway, and are kept in their original location. The upper locks or stops *a* may be adjusted up or down, according to the place desired for depositing the coal. These stops are secured to the traveling-ropes B by means of a bolt passing through them below the rope, or by any other suitable device.

The carriages C are provided with traveling-wheels *b*, located one in front and one in the rear of the hoisting-pulley *c*, which gives the carriages a steady motion, and prevents the draft on the cord F from locking them on the rope B.

The pulley-blocks D may be made in any suitable or well-known form. Each block is provided on its side with a stop or projection, *h*, which engages with the hook or projection *g* on the hinged lever *f* when the pulley-block D is brought up to the carriage C, and relieves the cord F of the weight of the bucket E and its contents, so that the bucket can be carried to any position on the rope B without dragging or dropping back.

The bucket E may be made in any well-known form, and should be provided with a hinged bottom, so that the contents can be discharged without reversing it; and it will also be advisable to provide the buckets with traveling-wheels, so that they can be run to either end of the vessel and brought back again under the hatchway. By providing one or two extra buckets they may be pulled into position for hoisting by attaching an additional rope to such extra bucket and to the one being hoisted.

The cord or rope F is attached to the carriage C at *e*. It is then passed down under the sheave *d*, and over the sheave *c;* then back over the pulley-wheel *l;* then down to the windlass at *m;* then across to the opposite end of the frame G, taking as many turns around the two cylinders as are necessary to give the required friction to enable either carriage to operate separately; then out at *n;* then up to

the opposite pulley *l;* then back to the other carriage on the opposite traveling-rope B, to which the other end of the rope is attached, the same as to the first carriage C, both attachments and both carriages being alike.

The cylinders of the windlass are provided with grooves, (see Fig. 3,) and by this double arrangement of cylinders the cord continues in the grooves in which it is placed, without any change of its relative position, which prevents the rope from climbing on the windlass-cylinders. A crank is shown for operating the windlass G; but in actual use it is to be operated by a reversible engine in hoisting heavy articles.

In operation, when one of the buckets descends to the point at which it is to be filled, the other travels up and along the rope B, and it may be continued in its travel beyond the point at which the opposite bucket stops, as the slack of the rope will then simply fall down, without in any way affecting the operation of either of the buckets.

When the bucket is filled, the windlass is reversed, and the filled bucket brought up until the hook *g* and the stop or projection *h* engage, and the carriage then commences a continuous traveling, until it reaches the upper stop *a*, which is arranged so as to disengage the lever *f;* but by tying a small cord to lever *f* the bucket may be discharged at any point, for it descends wherever the locking device *g h* is disengaged. While one carriage with its bucket is traveling forward, the other is going back to position for filling the bucket.

In descending, the lower wheel *b* of the carriage passes over the lower stop *a*, which checks the descent of the carriage, and the sheave *c* comes in contact with the lower point of *a*, and forms a complete lock or stop for the carriage; and the amount of power required to force the wheel of the carriage over the stop *a* brings the pulley-block D sufficiently close to the carriage to enable the two to be locked together when the bucket is elevated, and before the wheel of the carriage will be drawn over the stop *a*.

This device, it is evident, may be used for various purposes, and may be made to work either way, so as to load as well as unload, and may also be used for carrying earth away from deep excavations. I do not, therefore, limit myself to its use as a coal-elevator.

When it is desired to shorten the rope F it can be done by drawing the ends at *e* through the opening, and winding the part taken up on the carriage or carriages on suitable pins affixed for that purpose.

What I claim as new, and desire to secure by Letters Patent, is as follows:

1. The combination of the frames A and A′ and traveling-ropes B B with the carriages C C, single rope F, and windlass G, for carrying and returning by the same movement, substantially as specified.

2. The combination of the hook *g* and stop *h* with the carriage C, sheave *c*, pulley-block D, and rope F, having its ends attached to the carriage, substantially as described.

3. The combination of the windlass G with the frames A A′ and rope F, for operating the hoisting apparatus in either direction, substantially as set forth.

DAN BROBSTON.

Witnesses:
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O. W. BOND.