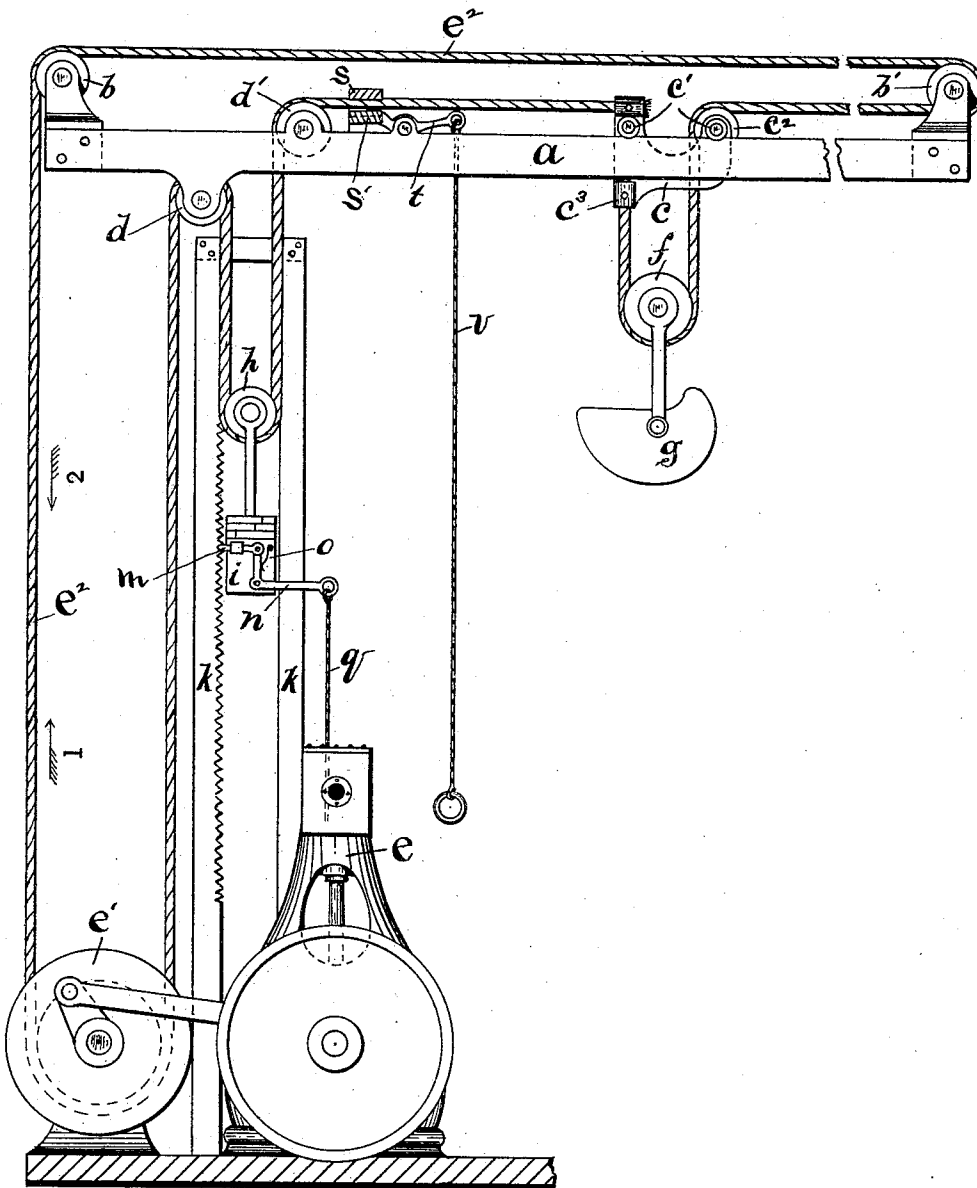


(No Model.)

H. R. PALMER.
HOISTING AND CONVEYING APPARATUS.

No. 486,645.

Patented Nov. 22, 1892.



Witnesses

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HOISTING AND CONVEYING APPARATUS.

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To all whom it may concern:

Be it known that I, HERBERT R. PALMER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have made certain new and useful Improvements in Hoisting and Conveying Apparatus, which improvements are fully set forth and described in the following specification, reference being had to the accompanying sheet of drawings, which illustrates in side elevation hoisting and conveying mechanism embodying my improvements.

This invention has for its immediate object the production of simple, strong, and durable mechanism for hoisting, conveying, and discharging heavy materials—as, for example, the handling of coal during shipment—and said invention seeks particularly to provide devices that may be readily controlled by a single operator.

In carrying out my general plan or system I have also improved various details of construction, all being described hereinafter.

Referring now to the drawings, *a* denotes a truss or girder formed, as here shown, of two parallel plates of iron or other suitable material, having at opposite ends score pulleys or sheaves *b b'*.

c indicates a carriage having scored or flanged wheels *c'*, adapted to travel upon the described girders. The carriage *c* also bears a score-pulley *c²*, that is in line with the pulleys *b b'*. Other score-pulleys *d d'* are journaled near one end of the girder beyond the path of the carriage *c*. The truss or girder *a* may be supported at one or both ends in any practical manner.

e is an arbitrary representation of a hoisting-engine, which may be of any approved type, having connected therewith a drum *e'*, whose direction of rotation may be readily reversed. Around this drum is coiled (preferably two or three turns) a flexible cable, chain, or rope *e²*, that leads upward around pulley *b* and thence to and partly around the pulley *b'* at the opposite end of the girder. Said cable is then led to the carriage-pulley *c²* and thence downward around a score-pulley *f*, to which is attached, as here shown, a bucket *g*. Cable *e²* then passes upward, and its end is securely clamped to the carriage at *c³*. Returning now to the drum, the cable leads

upward from the opposite side thereof, passes over pulley *d*, then downward and around a floating pulley *h*, that supports a weight *i*, 55 thence upward around pulley *d'*, and finally extends to the carriage, to which it is secured, as plainly illustrated. The weight *i* forms one of the most important features of my invention and should approximate the weight 60 of the article which it is desired to hoist and convey. It will be noticed that said weight is located between vertical guides or ways *k k*, one of which has upon the side that confronts the weight ratchet-teeth in rack form, 65 and it will also be seen that the weight has attached thereto a bolt or pawl *m*, connected with a bell-crank lever *n*, by means of which the bolt may be withdrawn from locking engagement with the rack-teeth. Bolt *m* is held 70 normally in lock with the teeth by some simple form of spring—as, for example, a flat spring—as here shown at *o*. The free end of lever *n* has attached to it a cord *q* of such length that it hangs within reach of the engineer, whatever may be the elevation of the 75 weight. By drawing down the cord *q* the bolt *m* may at any time be instantly withdrawn from the ratchet-teeth. Fixed on the girder *a* is a stand *s*, whose upper portion is 80 shaped to form the stationary-half part of a grip, the movable-half part of jaw *s'* of said grip being formed on one end of a lever *t*, journaled to rock upon the girder. The opposite end of said lever has attached thereto 85 a cord *v*, that hangs down within reach of the engineer, and it will now be understood that should the cord *v* be drawn down forcibly the cable *e²* may be firmly clamped at a point between the bucket *g* and weight *t*, thus preventing that particular portion of the cable 90 from moving. Assuming now that I have complete mechanism, as described, and that it is desired to hoist a load from a point near the engine and convey it to some distant 95 point (within the scope of the girder,) the cord *v* is first grasped and drawn downward to grip the cable between the weight and the bucket and the cord *q* is drawn downward to release bolt *m*. The drum *e'* is next set in 100 revolution to start the cable in the direction of arrow 2 if it is desired to raise the bucket clear of the ground. As the cable is wound up by the drum that portion that hangs pend-

ent supporting the bucket is gradually taken up, drawing with it the bucket, until the desired elevation is reached, when the grip is released and bolt *m* is permitted to again enter the rack-teeth, and thus check the movement of the weight, which has been slowly moving downward to take up the cable delivered by the drum. To transfer the loaded bucket to the distant end of the girder, the drum continues to revolve in the same direction the cable renders through the entire series of score pulleys, drawing the carriage and the suspended bucket along said girder. When the bucket has been carried sufficiently far, the drum is stopped, bolt *m* is drawn to release the weight, the grip is closed to clamp the cable, and the drum is then rotated in the opposite direction, causing the cable to move, as indicated by arrow 1. This slackens and delivers the cable at the distant end of the girder and permits the bucket to descend, the weight meanwhile being raised to compensate for the cable delivered from the drum. Having stopped the drum and dumped the bucket, the latter is raised by reversing the direction of rotation of said drum, and when the proper height is reached the weight is locked by bolt *m*, the grip is released, the movement of the drum is reversed, and as a result the carriage and bucket are drawn back toward their starting-point.

It will thus be seen that the load may be caused to rise or fall and may be moved in either direction along the girder by properly controlling the drum, the weight, and the gripping mechanism, and also that the several necessary operations may be attended to by a single operator, all being accomplished without the aid of auxiliary drums or cables.

Having described my invention, I claim—

1. In combination with the drum and cable of hoisting apparatus of the class referred to, a load-supporting carriage controlled by said cable, a take-up consisting of a weight suspended by said cable between the carriage and the drum, and mechanism for gripping the cable between the weight and carriage, for the purpose specified.

2. In combination with the drum and cable of hoisting apparatus of the class referred to, a load-supporting carriage controlled by said cable, a take-up consisting of a weight suspended by said cable between the carriage and drum, means for locking said weight in desired positions, and mechanism for gripping the cable between the weight and carriage, all for the purpose specified.

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