(No Model.) 2 Sheets—Sheet 1.

A. L. HITCHCOCK.

COAL ELEVATOR AND BUCKET.

No. 287,831. Patented Nov. 6, 1883.

FIG. 1.

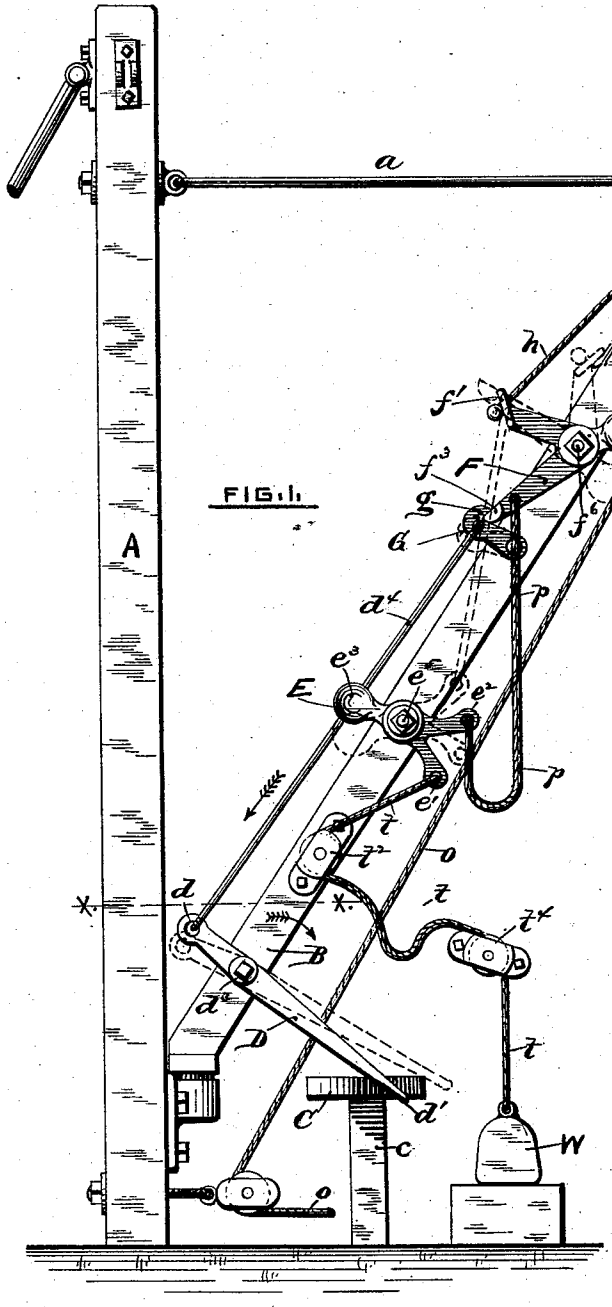
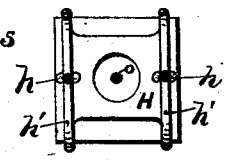


FIG. 5.



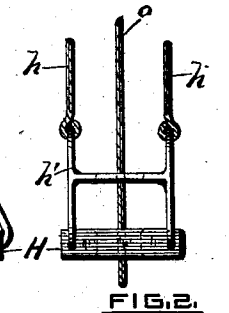
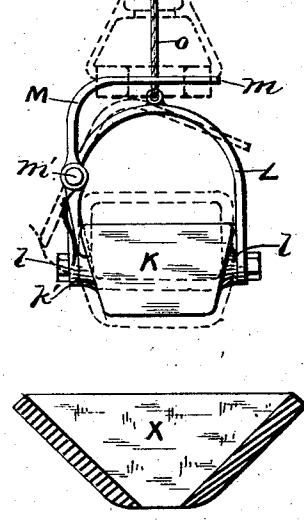


FIG. 2.



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(No Model.) 2 Sheets—Sheet 2.

A. L. HITCHCOCK.

COAL ELEVATOR AND BUCKET.

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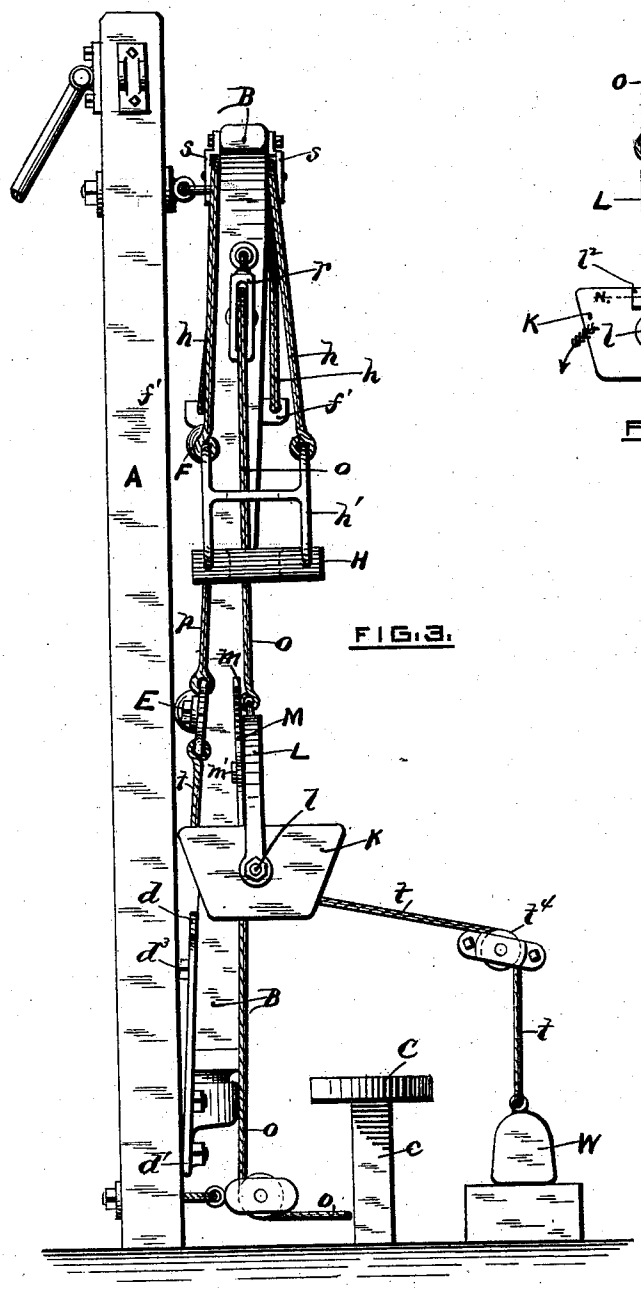


FIG. 3.

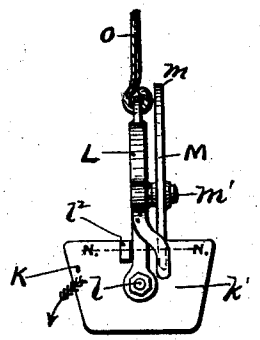


FIG. 6.

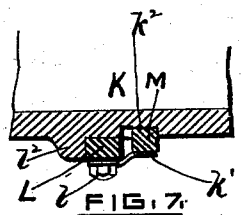


FIG. 7.

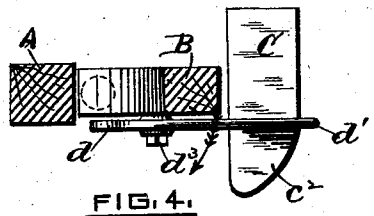


FIG. 4.

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UNITED STATES PATENT OFFICE.

ALBERT L. HITCHCOCK, OF PAWTUCKET, RHODE ISLAND.

COAL ELEVATOR AND BUCKET.

SPECIFICATION forming part of Letters Patent No. 287,831, dated November 6, 1883.

Application filed June 15, 1883. (No model.)

To all whom it may concern:

Be it known that I, ALBERT L. HITCHCOCK, a citizen of the United States, residing at Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Coal Elevators and Buckets; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to certain improvements in apparatus for hoisting coal, &c.; and it consists of a bucket having a spring-actuated catch pivoted to the bail thereof, in combination with a tripping-weight adapted to release the spring-catch, which is operated by a series of levers, &c., as will be more fully hereinafter set forth.

In the accompanying two sheets of drawings, Figure 1 represents a vertical elevation of a common coal-hoist and boom as provided with my improvements. Fig. 2 represents a side view of the tripping-weight. Fig. 3 represents a view similar to Fig. 1, but showing the boom swung around to the front. Fig. 4 represents a sectional plan view through line $x\ x$ of Fig. 1, showing the cam and tripping-lever. Fig. 5 represents a top view of the tripping-weight. Fig. 6 represents a front view of the bucket and catch. Fig. 7 represents a partial transverse section of the bucket, showing the catch, &c., enlarged.

Again referring to the drawings, A represents the mast of an ordinary hoist, and provided with the swinging boom B and stay a, as common.

C represents a stationary tripping-cam, supported at c.

D represents a tripping-lever, which is fulcrumed to the boom B at d^3, the lower end of said lever being adapted to engage the cam at c^2. The opposite end, d, of the lever is connected with a rod, d^4, which latter in turn is connected with the short lever G, which is also pivoted to the boom, and having a catch, g. Said catch is adapted to engage an arm, f^3, of the lever F, the latter being still further provided with a counter-weight, f^2, and arm f'. This lever is also pivoted to the boom at f^6, as shown.

To the arm f' are secured two cords, $h\ h$, which pass over sheaves $s\ s$, secured at the top of the boom. Thence the cords pass downwardly and are secured to the frame h' of the tripping-weight H. Said weight is also provided with a central opening, through which the hoisting-rope o freely passes. Said rope is attached to suitable hoisting mechanism, from whence it (the rope) leads to the snatch-block at the foot of the mast A, thence up to and over the block r, and, passing down through the weight H, is finally secured to the bail L of the bucket or tub K, as shown. Said bucket—which may be of the ordinary form—is pivoted at $l\ l$ to the bail L. To the side of the bail is pivoted, at m', a trip-lever, M, the upper portion thereof being bent and extending horizontally over and above the bail, as shown at m. The lower end of said lever is adapted to engage a slot or recess, k^2, formed on one side of the bucket. (See Figs. 1, 6, and 7.) A spring, k', also secured to the bail, serves to retain the lever M in its normal or locked position.

t represents a cord, having attached thereto a weight, W. Said cord passes up and over a sheave, t^4, secured to the side of the building or car, thence over another sheave or pulley, t^2, the latter being attached to the boom, after which the cord leads up to the weighted lever E, and is secured thereto at e'. Said lever E is pivoted to the boom at e^5, and provided with a counter-weight, e^3. Said lever has also secured thereto at e^2 a cord, p, which connects the levers E and F together.

It will be perceived that the counter-weight W should be heavy enough to overbalance the tripping-weight H, and also overcome the weight and friction of the levers and connections.

The following is the manner of operating and using my invention: The boom, with its bucket attached, is assumed to have been swung over the hatchway of a vessel, and the bucket filled and also hoisted to the proper height, after which the boom is swung rearward to the position shown in Fig. 1, and nearly over the hopper or bin X, when, by slightly swinging the boom still farther to the rear, the end d' of the

lever D will be brought into contact with the cam-surface c^2, Fig. 4, and, sliding along therewith, lifts the lever to the position shown by dotted lines, which movement at the same time, by means of the rod d^4, withdraws the catch-lever G and disengages the lever F, thereby releasing the tripping-weight H, which latter falls by its gravity, and striking the arm m of the lever M depresses it, as represented by dotted lines, thereby withdrawing the lower end of said lever from the slot or recess k^2 of the bucket, and allows the bucket to tip and empty itself in the usual manner. The boom is now swung forward again, the levers F E being in the position shown by dotted lines. The latter movement takes up the slack of the cord t and slightly draws upon the weight W, and depresses the lower lever, E, until it assumes the position shown in full lines. The lever F also moves simultaneously therewith by means of the connecting-cord p. The lower arm, f^3, of the lever F slides over and into the catch or notch g of the lever G. The long arm d' of the cam or tripping-lever D overbalances the weight of the rod d^4 and lever G, thereby rendering said levers F G self-locking when brought together. The tripping-weight H is raised into position by means of the connecting-cords h, which are also secured to the lever F. At this stage of the operation, the boom being now swung into position over the vessel's hatch, the bucket is lowered and filled, after which it is hoisted to the proper height by means of the rope o, when the boom is again swung rearward and the bucket emptied, as before described.

I may dispense with the cords and sheaves h s and attach a weight, H, directly to the lever F by extending an arm therefrom, and accomplish the same result.

My improved bucket-tripping device can be readily adapted for use on inclined ways, where the swinging boom is not used. The bucket is suspended from the bail a little off its center of gravity, as common, so that when the arm M is withdrawn from the notch k^2 the bucket will automatically empty itself.

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

1. The combination, with a tripping-weight connected with suitable automatic releasing mechanism, of an elevator-bucket provided with a bail and catch, the latter adapted to be unlocked by means of said weight, substantially as shown and set forth.

2. In a coal-elevator, the tripping-weight H, provided with a central opening adapted to freely receive the bucket-hoisting rope o, said weight further adapted to be connected with suitable means for automatically releasing and dropping said weight, substantially as shown and set forth.

3. In a coal-elevator, the combination of the levers E F and cords t p h with the tripping-weight H and counter-weight W, substantially as shown and described.

4. In a coal-elevator, the combination of the tripping-lever D and rod or connection d^4 with the cam C and catch G, substantially as shown and described.

In testimony whereof I have affixed my signature in presence of two witnesses.

ALBERT L. HITCHCOCK.

Witnesses:
GEO. H. REMINGTON,
WM. R. DUTEMPLE.