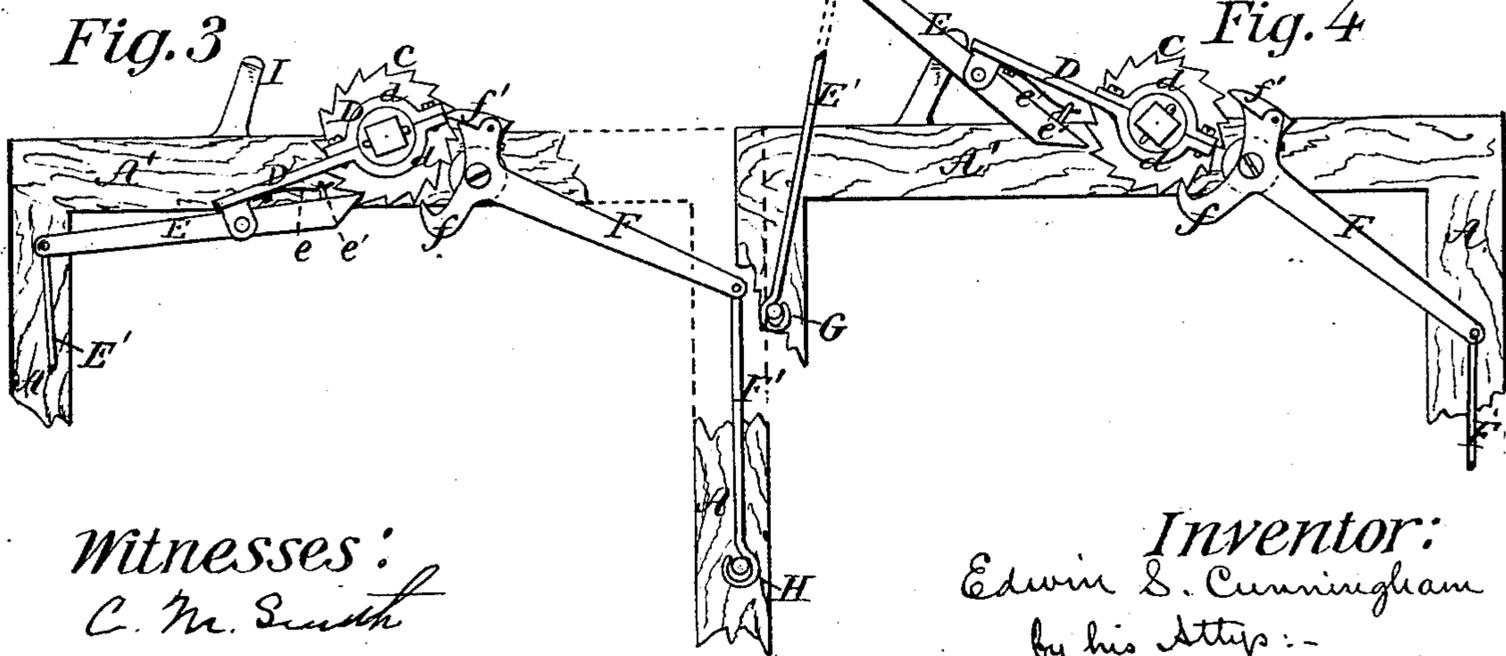
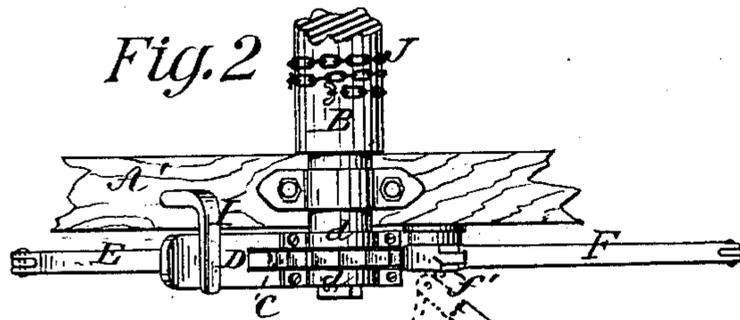
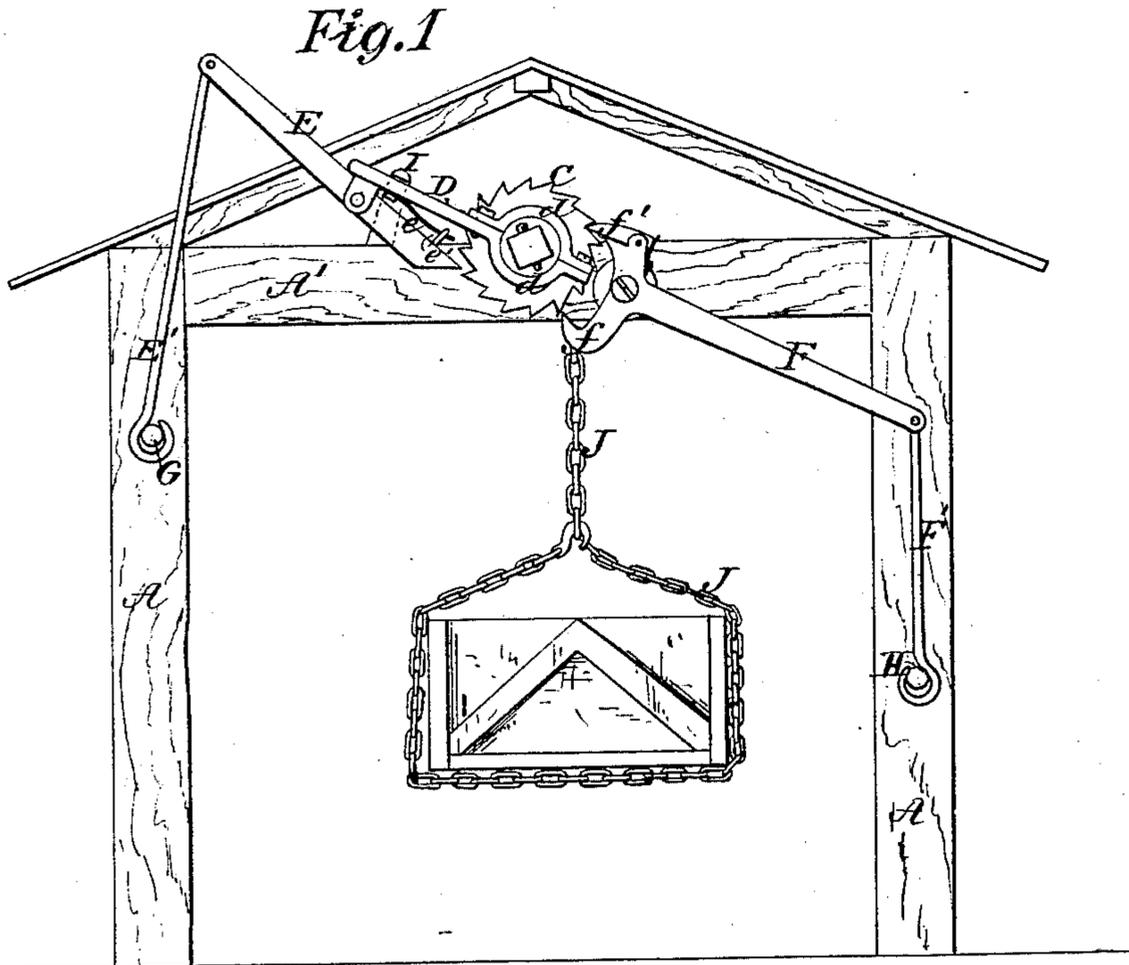


E. S. CUNNINGHAM.  
Hoisting and Elevating Apparatus.

No. 223,033.

Patented Dec. 30, 1879.



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# UNITED STATES PATENT OFFICE.

EDWIN S. CUNNINGHAM, OF MOOREFIELD, WEST VIRGINIA.

## IMPROVEMENT IN HOISTING AND ELEVATING APPARATUS.

Specification forming part of Letters Patent No. **223,033**, dated December 30, 1879; application filed September 24, 1879.

*To all whom it may concern:*

Be it known that I, EDWIN S. CUNNINGHAM, of Moorefield, in the county of Hardy and State of West Virginia, have invented certain new and useful Improvements in Hoisting and Elevating Apparatus, of which the following is a specification.

My invention is designed more particularly for use as a device for hoisting wagon-bodies from the running-gear either for the purpose of unloading them when filled with grain, or for substituting other bodies or ladders when it is desired to use the same running-gear in hauling hay, straw, manure, &c. This invention may, however, be readily applied to elevators of the class in which a platform or car is raised and lowered between guide-rails for conveying goods and other material in storehouses and mines; and the improvement consists in a novel lever combination and mechanism for revolving the hoisting-roller in either direction to raise or lower the body at pleasure, and employs a lever arranged upon one side of the roller, that is hinged to a frame which is journaled upon and vibrates around the axis of the roller in such manner that one end of the hinged lever will take into the teeth of a ratchet-wheel secured upon the roller and revolve the same in one direction, while an escapement-lever pivoted outside the axis of the roller to the framing, and provided with a fixed pawl and a pivoted spring pawl or click, will, when stationary, serve as a click to hold the ratchet-wheel and roller while being operated upon by the first-named lever, or, by its vibrations, permit the weighted roller and ratchet to revolve in the opposite direction, as will hereinafter more fully appear.

The details of the mechanism upon which are based other claims will be fully set forth in the body of the specification.

In the accompanying drawings, Figure 1 is a perspective view of a wagon-shed with my hoisting device applied, and showing a wagon-body suspended thereby; Fig. 2, a plan view of the lever mechanism detached; and Figs. 3 and 4, front elevations of the same, showing the levers in different positions.

The framing A A of the shed or elevator-shaft may be of any well-known construction. The hoisting-roller B is journaled upon two of

the cross-beams A' A', at the outer end of which is firmly secured a ratchet-wheel, C. A bifurcated frame, D, has journal bearings and straps *d d* upon each of its arms, which fit neatly upon turned hubs on opposite sides of the ratchet-wheel, so as to swing freely thereon. The outer end of the frame D is provided upon its under side with lugs, to which is pivoted a lever, E, having its end sharpened to engage with the teeth of the ratchet-wheel. A spring-plate, *e*, secured at one end to the frame D, engages in a staple, *e'*, upon the upper side of the lever, beneath the frame, in such manner that the lever E is held in such position relatively to the ratchet-wheel and frame that the end of the lever will always press against and engage with the ratchet-teeth when vibrating around it with the frame. The spring, while holding the lever against the teeth of the ratchet-wheel, will permit the lever to slide over the inclined faces of the teeth when moved backward to take a fresh hold.

The escapement-lever F is pivoted to the nearest cross-beam or frame-piece A' upon the side of the ratchet-wheel opposite the lever E. The lever F is provided with a fixed pawl or lower jaw, *f*, and a hinged pawl or click, *f'*, which are arranged opposite the ratchet-wheel in such manner that either the fixed pawl or the hinged pawl will at all times engage with the teeth of the ratchet-wheel, so that the ratchet-wheel will be prevented from moving backward while being operated upon by the main lever E, and be prevented from moving backward more than one tooth at a time by the vibrations of the escapement-lever F. The hinged pawl or click *f'* is preferably operated upon by a spring to hold it down upon the teeth of the ratchet-wheel, but will not prevent its being lifted therefrom by the pressure of the inclined faces of the teeth. The spring may be dispensed with when a heavy or weighted pawl is used.

In order to bring the levers E F within reach of the operator upon the lower floor, and furthermore to secure a more positive and safer operation of the mechanism, I employ rods E' F', secured, respectively, to the ends of the levers E F, and provided with loops upon their free ends, which are made to engage with pins

G H upon the framing, while the levers are to be held stationary. The rods or loops are grasped by the hand and serve to actuate the levers, which are usually arranged upon a floor above that upon which the operator stands. The bracket or stop-bar I is secured to the cross-beam or frame-piece A', and projects above and across the frame D to limit its upward vibration, and the locking-pin G is arranged at a point relatively thereto, so that when engaged in the loop of the rod E' it will hold the lever E at a sufficient angle with the frame D to keep it at all times out of contact with the teeth of the ratchet-wheel. In this position the ratchet-wheel is supported entirely by the pawl of the escapement-lever.

The lever F and rod F', being held upon the pin H, will throw the spring pawl or click f' of the escapement-lever in position. If it is desired to lift the load the lever E is released from its locking-pin and vibrated. During each backward movement of the lever E the ratchet-wheel will be held by the spring-pawl f' of the lever F, and during each forward movement the inclined faces of the ratchet-teeth will operate upon the pawl f' to raise it out of contact with the passing tooth. When the load is to be lowered the lever E is thrown out of position by means of the rod E' and locking-pin G, and the escapement-lever F is

vibrated, which will, as before described, allow but one tooth at a time to escape between each vibration of the lever in a well-known manner, so that the load will be allowed to gradually descend.

It will be understood that suitable chains J J, secured to the hoisting-roller B, are attached at their opposite ends to the wagon-body or other load to be lifted.

I claim as my invention and desire to secure by Letters-Patent—

1. In a hoisting-machine, the combination, with a lifting-roller, of a ratchet-wheel, a vibrating frame, with the pawl-lever pivoted thereto, and the escapement-lever, pivoted outside the axis of the roller, provided with a rigid jaw and a spring jaw or click, these parts being combined and arranged and operating substantially in the manner described.

2. The combination of the lifting-roller, the ratchet-wheel, the vibrating frame, the lever pivoted thereto, the stop-bar I, the escapement-lever, the operating-rods E' F', and the locking-pins, all these parts being constructed, arranged, and operating substantially as and for the purpose described.

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