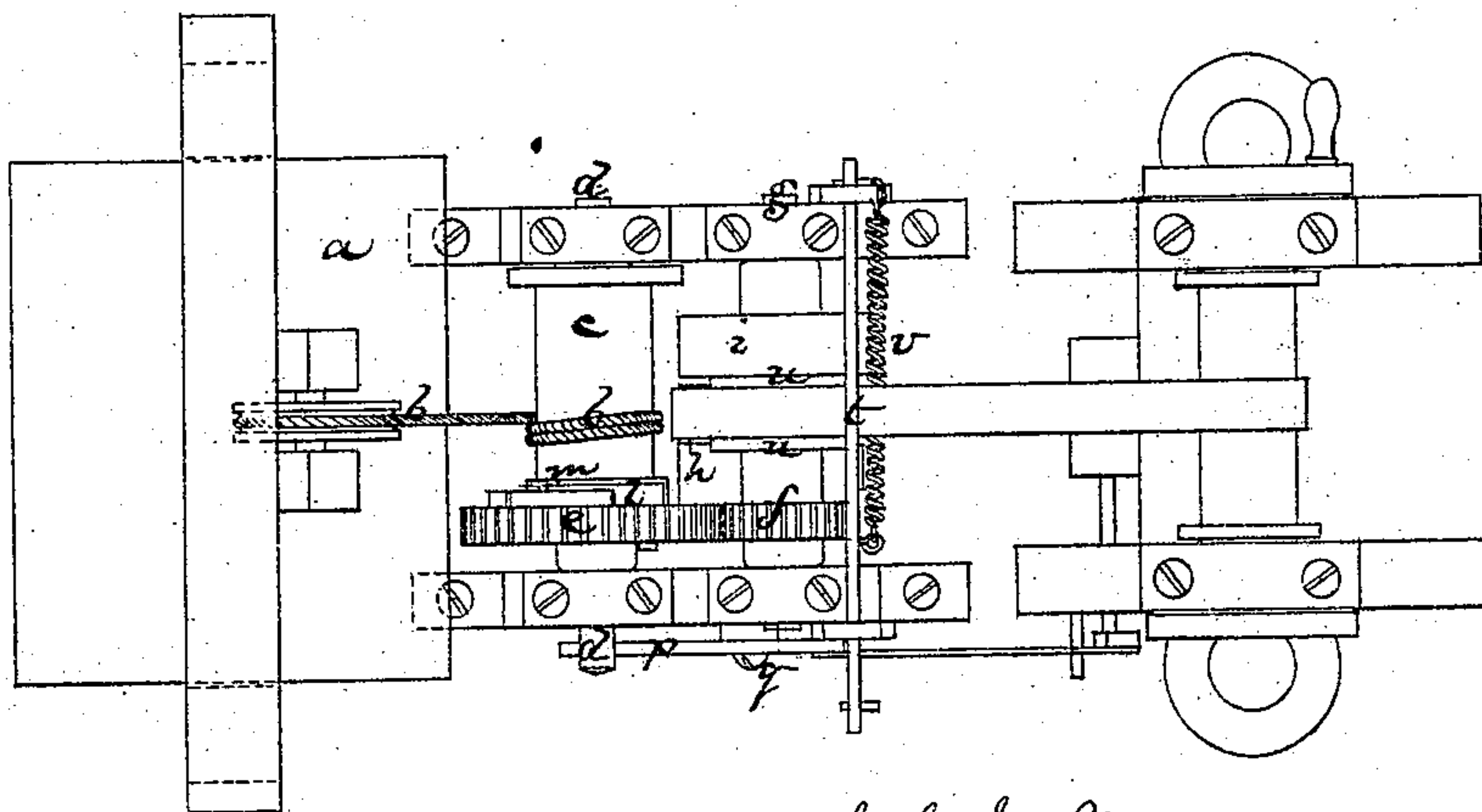
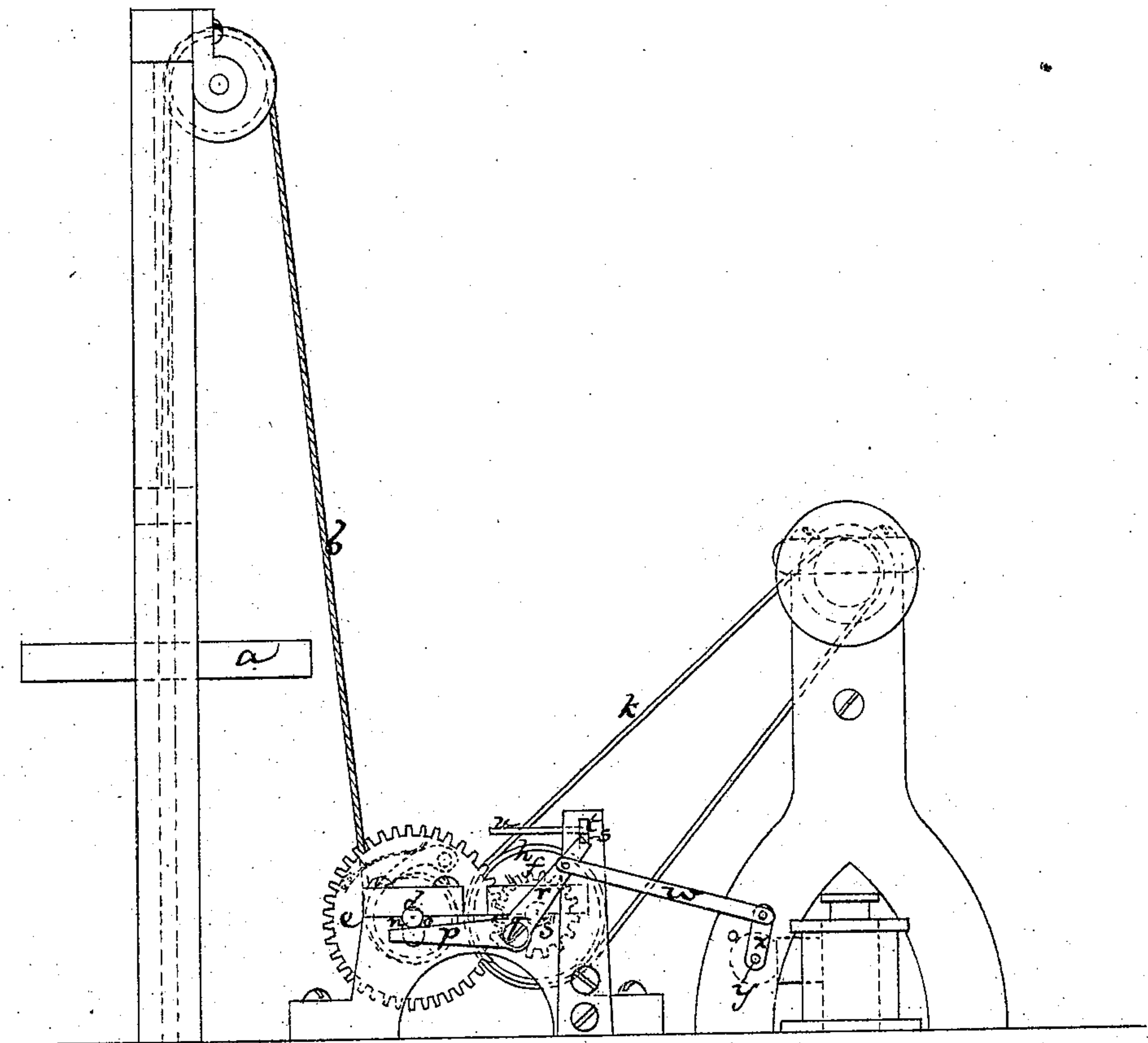


No. 119,635. *Chas^d E. Moore.* *Imp't in Elevators.* Patented Oct. 3, 1871.



Charles E. Moore
by his Attys.
Crosby & Gould.
Witnessed:
J. B. Kidder
L. H. Latimer

UNITED STATES PATENT OFFICE.

CHARLES E. MOORE, OF BOSTON, ASSIGNOR TO HIMSELF AND MARTIN L. WYMAN,
OF MELROSE, MASSACHUSETTS.

IMPROVEMENT IN ELEVATORS.

Specification forming part of Letters Patent No. 119,635, dated October 3, 1871.

To all whom it may concern:

Be it known that I, CHARLES E. MOORE, of Boston, in the county of Suffolk and State of Massachusetts, have invented Improvements in Elevators; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

In elevators as generally organized delays and damage are constantly occurring from the accidental arrest of the descending car by obstructions left projecting into the hoist-way, the rope continuing to unwind from the drum after the car stops, and the slack-rope often entering the gear mechanism and being cut up by the gears, and the mechanism being strained and injured before the motion of the drum can be arrested.

My invention relates to the construction of elevator mechanism with reference to such an arrangement of the hoisting apparatus as shall automatically effect a stoppage of the unwinding-rope (preferably without stopping the engine) whenever the descent of the car is arrested by an obstruction, and at the instant of such arrest. The invention consists in combining, with the pulley-shaft and pulleys, and the drum-shaft and connecting gearing, a mechanism which shall cause the arrested descending car to automatically stop the rotating movement of the drum, either by so combining the drum and its gear that the gear will continue to rotate without communicating motion to the drum, or by so arranging the drum-shaft and the pulley-shaft and its pulleys that the weight of the drum when released from the strain of the rope (consequent upon the weight of the car) shall shift the belt from the fast over to the loose pulley.

The drawing represents an elevator mechanism embodying the invention, and shows the mechanism in side elevation and in plan.

a denotes the car; *b*, the rope; *c*, the winding-drum; *d*, the drum-shaft; *e*, the drum-gear meshing into and driven by the gear-pinion *f* on the pulley-shaft *g*, on which are the fast pulley *h* and loose pulley *i*. *k* is the driving-belt. Instead of making the drum-gear *e* fast upon the drum-shaft *d* it is made rotary thereupon, and to its inner side is jointed a pawl, *l*, which engages with one or more ratchet-teeth, *m*, on the periphery of the drum, the pawl *l* being held down to

the ratchet or drum by a suitable spring. When the car is being elevated the drum is rotated by the pawl, and when the car is lowering the weight of the car holds the ratchet and pawl in engagement, so that both in the rise and descent of the car the gear and drum rotate as one (in the usual manner) unless and until the car may be stopped by an obstruction. If so stopped the drum is, of course, instantly relieved of the stress of the weight of the car, and, as this alone tended to turn the drum, the rotation of the drum ceases, although the gear (loose upon the shaft) continues to be rotated by the pulley-shaft gear, the pawl riding back over the ratchet-tooth or teeth. There is consequently no slack of the rope, and when the obstruction is removed the rope is always in position to again take the strain of the weight of the car.

Instead of thus effecting the stoppage of the drum alone, the whole mechanism of the pulley and drum-shafts may be stopped as follows: The drum-shaft rotates in bearings *n*, and, as the strain upon the drum always tends to lift it, the shaft turns upon the journal-caps and not upon bearing-surfaces below. I therefore slot down the journal-boxes, as seen at *o*, and at one end of the shaft I extend under its projecting end one arm, *p*, of a lever (fulcrumed at *q*) whose other arm, *r*, extends into a notch, *s*, in the under side of a shipper-rod or slide, *t*, sliding in suitable guides, and having a shipper-fork, *u*, that embraces the driving-belt *k*. The shipper-rod is drawn inward by the stress of a spring, *v*, and when free to be actuated by the spring it throws the belt from the fast pulley *h* onto the loose pulley *i*. The projecting journal of the drum rests on the lever-arm *p*, and the strain upon the rope exerted by the weight of the car holds the drum up and keeps the lever in its normal position. But when the car in its descent meets with any obstruction which causes the rope to be relieved from the weight of the car, the drum being also relieved from the strain of the rope drops in its bearings, thereby actuating the lever and drawing its arm *r* from the notch *s*, the shipper-rod being then thrown in by its spring, shifting the belt onto the loose pulley, and thus effecting the stoppage of the gears and the rotation of the rope-winding drum.

It will be obvious that, whether either or both of the rope-stopping contrivances be used, the

slackening of the rope around the drum will always be stopped by the stoppage of the car or its accidental obstruction while descending through the hoist-way.

The lever-arm *r* may be connected, by a link, *w*, with an arm, *x*, on the valve-rod *y* of the engine, so that movement of the arm by the fall of the drum will shift the valve and stop the engine, this valve-operating mechanism being preferably employed when the drum-gear is driven directly from the engine without intervention of the belt.

I claim—

1. In combination with or as a part of an elevator mechanism, a rope-winding drum having a toothed gear loose upon its shaft, and which

drives the drum by a pawl upon said gear, substantially as described.

2. The winding-drum, arranged, substantially as shown and described, so that the weight of the drum or its downward movement when released from the strain of the car exerted upon the rope effects the stoppage of the motive power that drives the drum.

3. A drum hung so that it drops when the car is arrested and shifts the belt by dropping.

Executed January 21, 1871.

C. E. MOORE.

Witnesses:

L. N. BIGELOW,
L. H. LATIMER.