J. H. BANCROFT.

Elevator.

No. 164,069. Patented June 8, 1875.

Fig. 1.

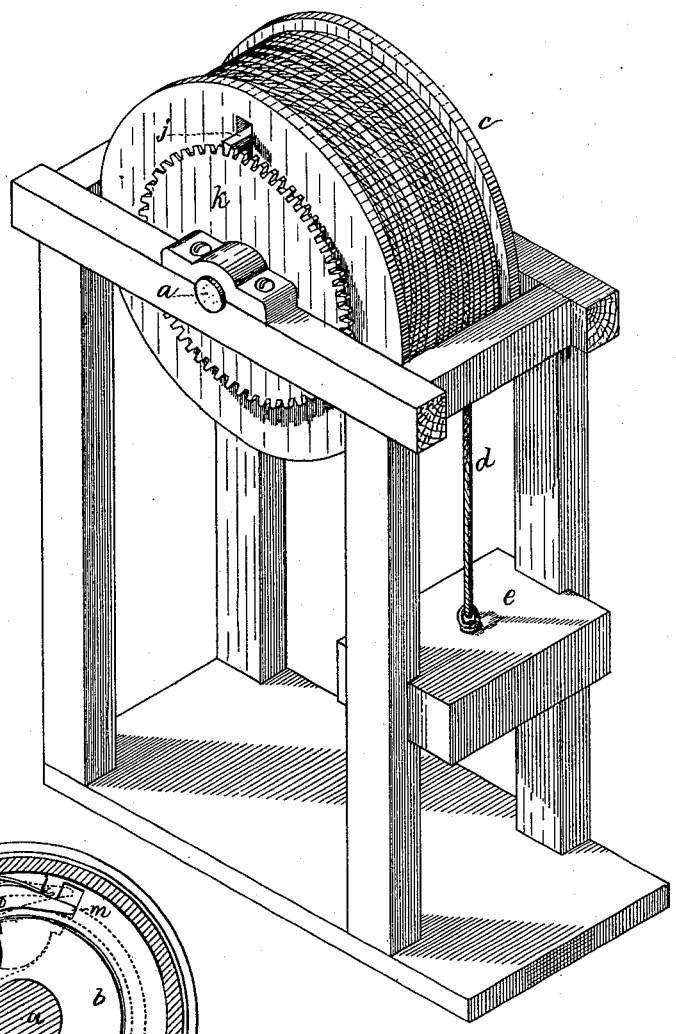
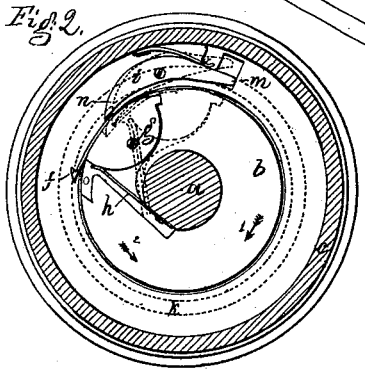


Fig. 2.



Witnesses.

W^m Pratt.

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per Lovejoy & Gregory. Attys

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UNITED STATES PATENT OFFICE.

JONAS H. BANCROFT, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ELEVATORS.

Specification forming part of Letters Patent No. **164,069**, dated June 8, 1875; application filed May 15, 1875.

To all whom it may concern:

Be it known that I, JONAS H. BANCROFT, of Boston, county of Suffolk and State of Massachusetts, have invented an Improvement in Elevators, of which the following is a specification:

This invention has for its object to prevent the uncoiling and damage of the rope or chain and the mechanism for moving the car whenever the car in its downward movement is in any way obstructed or has its passage impeded, as is often the case. I combine with a shaft driven by power a disk provided with a catch, which engages a pivoted latch on the surrounding winding-drum, on which the hoisting-rope is wound. The latch is kept in engagement with the catch at all times, except when the car is obstructed in its downward passage, and then the weight of the car, which acts through the rope and the winding-drum to keep the latch and catch in engagement, ceasing, the latch of the winding-drum is no longer held pressed into the catch of the driven shaft, and the latter continues to rotate without moving the winding-drum. When the driven shaft in its movement moves its catch away from the pivoted latch of the then stationary winding-drum, the latch, one arm of which is heavier than the other, and which is provided with a projecting finger, engages a stationary ratchet, and prevents any movement of the winding-drum such as might be produced by reason of the weight of the rope.

Figure 1 represents, in perspective, sufficient of an elevator to illustrate my improvement; and Fig. 2, a detail thereof, showing the catch and latch.

In a suitable frame is supported the shaft *a* of the elevator. It is driven by suitable or any well-known gearing; and I denominate such shaft *a* the driven shaft. This shaft at each end carries a disk, *b*, (see Fig. 2,) one disk only being shown in the drawing, and these disks serve the purpose of bearings for the winding-drum *c*, flanged at its ends, and grooved for the reception of the hoisting or car-moving rope *d*, which is attached to the car *e*, of suitable construction, and properly guided in its ascent and descent. The driven shaft has attached to one of its disks *b* a hooked catch, *f*, pivoted at *g*, and held away from the axis *a* by a spring, *h*. On the winding-drum *c* is pivoted a latch, *i*, having a projecting finger, *j*, which projects through a slot in the side of the winding-drum, (see Fig. 1,) where it may, as hereinafter described, engage the teeth of a stationary notched wheel, *k*, a spring, *l*, carried by the winding-drum, acting to press the end *n* of the latch downward.

Supposing the car in the act of rising, the shaft *a* then turns in direction of arrow 1, Fig. 2, and the catch *f* engages the latch *i*, the parts assuming the position shown in dotted lines, Fig. 2, and turning the winding-drum in the same direction, coiling the rope *d* properly thereon.

If the car is to descend, the driver is moved in the direction of arrow 2, Fig. 2, and during this movement the end *n* of the latch *i* engages the catch, and remains closely engaged with it, the winding-drum moving in the same direction through the weight of the car attached to the hoisting-rope, and being prevented from moving too rapidly by the engagement of the latch and catch. During this engagement of the latch and catch the end *m* of the latch is kept elevated; but should the descent of the car *e* become obstructed in any manner, thereby removing from the winding-drum the weight of the car, which is the force that keeps the latch and catch engaged, the movement of the winding-drum will be checked, and the catch of the driven shaft will pass beyond and away from the end *n* of the latch *i*, as shown in full lines, Fig. 2, and then the spring *l* quickly depresses the end *m* of the latch *i*, causing the finger *j* to engage the toothed ratchet *k*, instantly checking the movement of the winding-drum *c*.

The disk *b* will be preferably made thick enough to extend under the latch and prevent the descent of the end *n* of the latch below the path of the catch, except when opposite the end of the catch, when the latch may be tipped, as hereinafter described.

The winding-drum is herein shown as located above the car; but it is evident that this my invention would operate the same if the winding-drum were located below the car, and the rope passed to the car over suitable pulleys.

After the latch *i* is thrown into engagement

with the ratchet *k* by the stoppage of the descent of the car, further movement of the driven shaft and its catch *f* in the direction of arrow 2 will not affect the latch; but when the shaft *a* is reversed or turned in the direction of arrow 1, so as to again pick up the car, the catch engages the end of the latch, and the end of the catch is allowed to descend a little into a space, *o*, in the disk *b*, and this allows the latch to turn on its pivot and release the finger *j* from the ratchet *k*.

The disk *b* at the end of the driven shaft opposite the disk *b* (shown in Fig. 2) will be provided with a latch and catch like that shown in Fig. 2, except the finger *j*, which will be omitted; or the disk may have simply a tooth instead of the catch, the teeth and catches of the opposite disks being in the same line.

With my arrangement of parts there is no chance whatever for the formation of slack rope.

The catch might be arranged directly on the driven shaft, instead of on the disk, and then the head of the winding-drum would be brought near the shaft.

I claim—

1. The combination of the driven shaft and its catch with the winding-drum and its pivoted latch, substantially as and for the purpose described.

2. The driven shaft and its catch, in combination with the winding-drum, its pivoted latch and finger, and the stationary toothed ratchet, into which the finger engages when the descent of the car is arrested, substantially as described.

3. The combination of the car, the operating-rope, winding-drum, and pivoted latch with the catch and driven shaft, and the winding-drum surrounding the driven shaft, and operating substantially as described.

4. The combination of the driven shaft, the disk provided with a space, *o*, and the catch with the winding-drum and latch, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JONAS H. BANCROFT.

Witnesses:
G. W. GREGORY,
WM. PRATT.