(No Model.) 2 Sheets—Sheet 1.

W. E. NICKERSON.

ELEVATOR ATTACHMENT.

No. 397,746. Patented Feb. 12, 1889.

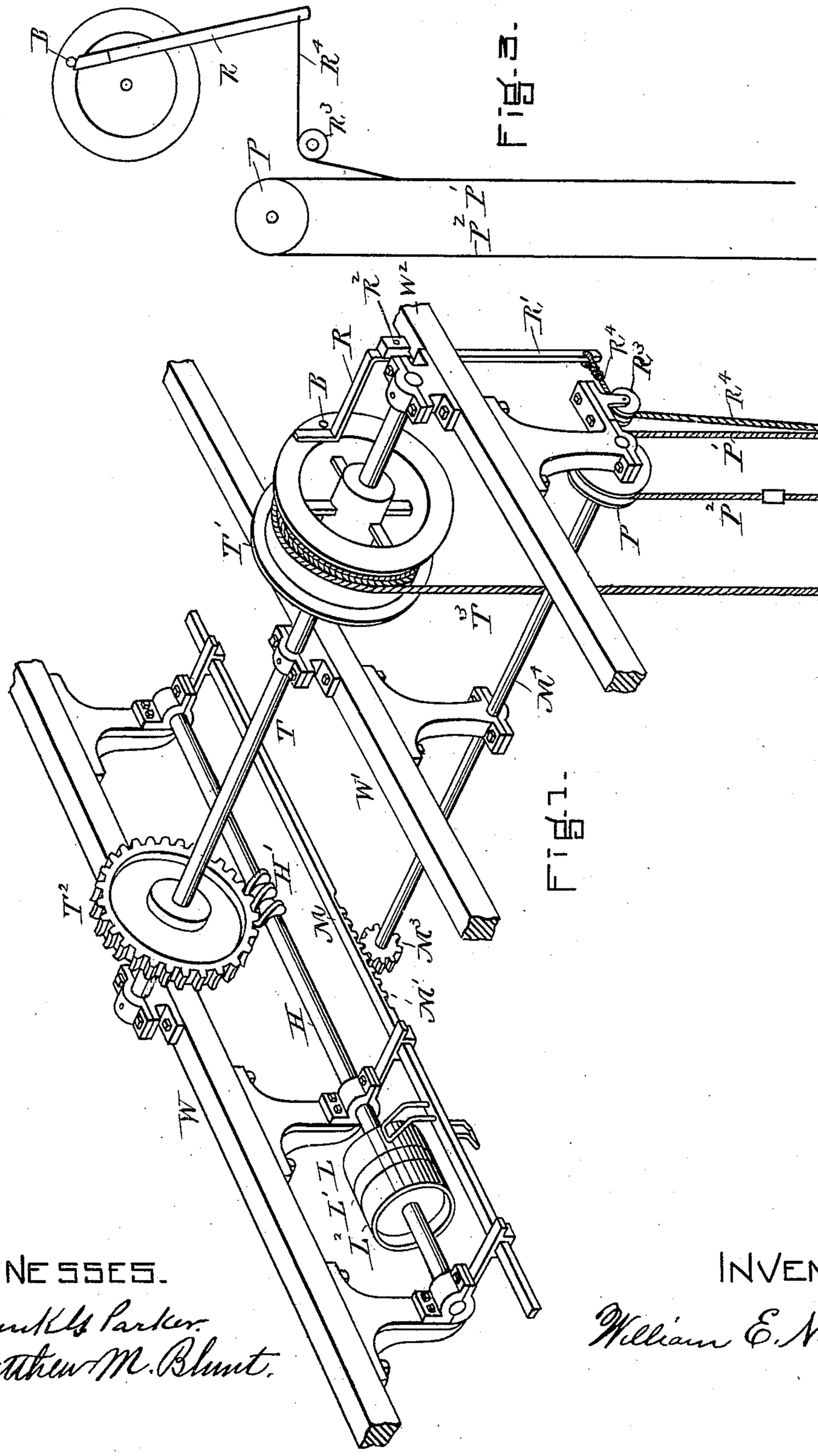

Fig. 1.

WITNESSES.

Frank L. Parker.

Matthew M. Blunt.

INVENTOR.

William E. Nickerson.

(No Model.) 2 Sheets—Sheet 2.

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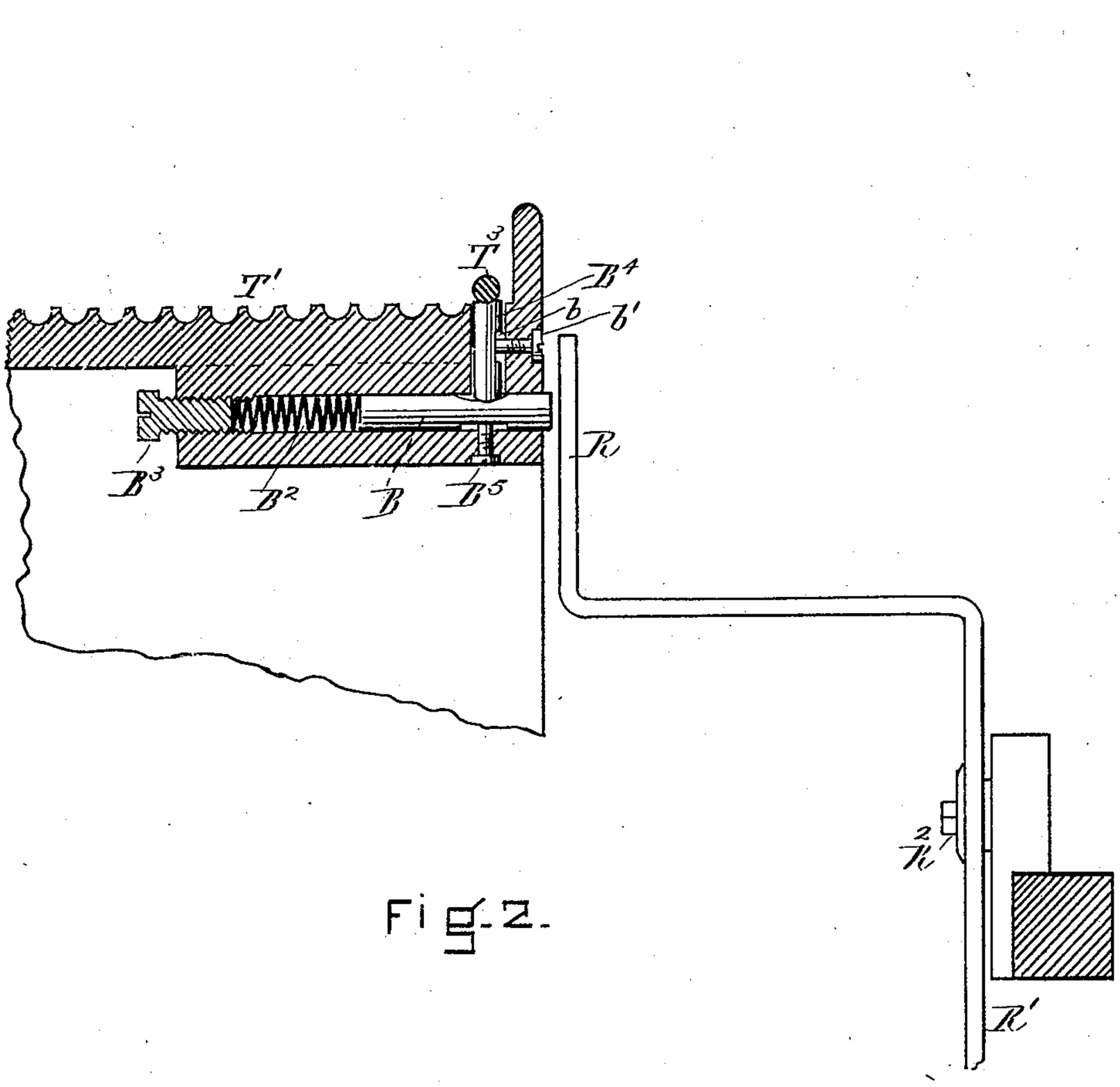

Fig. 2.

WITNESSES.

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UNITED STATES PATENT OFFICE.

WILLIAM E. NICKERSON, OF CAMBRIDGE, MASSACHUSETTS.

ELEVATOR ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 397,746, dated February 12, 1889.

Application filed October 17, 1888. Serial No. 288,318. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. NICKERSON, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Elevator Attachments, of which the following, taken in connection with the accompanying drawings, is a specification.

The object of my invention is to stop the direct-operating machinery of the elevator from continued action when from any cause the elevator-carriage is checked in its downward motion sufficiently to cause the rope to become slack and liable to be caught in the machinery and be injured or to cause further accident and injury. This object I attain by the mechanism shown in the accompanying drawings, in which—

Figure 1 is a perspective view showing my attachment applied to an ordinary elevator-hoisting apparatus. Fig. 2 shows details in section, and Fig. 3 is an illustrative diagram.

It is well known to manufacturers and users of elevators that, under all circumstances, when an elevator-rope breaks or becomes slack it is better to have the actuating mechanism stop, as a continued motion is almost always accompanied with injury to the machinery and often to the person.

My invention is particularly adapted to the case in which a rope becomes slack from the stopping of the elevator-carriage during its descent and while the rope is still being uncoiled, as in such a case the rope thus freed is almost sure to become entangled in the machinery, and either become broken itself or break other parts of the machine.

In the drawings, W W′ W^2 represent the part of the frame-work which holds the hoisting-gear of an elevator.

T is the main shaft running in housings. Upon one end of the shaft T the hoisting pulley or drum T′ is attached, and upon the other end a worm-gear, T^2, the whole being driven by a worm, H′, on the shaft H, the shaft H being driven by reversing-belts, (not shown,) that operate on the pulleys L, L′, and L^2, the pulley L′ being rigidly attached to the shaft H, the others being loose. The belts referred to are moved from one pulley to another, in the usual manner, by the belt-shifter M, said shifter M being provided with a rack, M′, with which a pinion, M^3, on the shaft M^4 engages.

P is a wheel, about which the hand or reversing rope P′ P^2 passes for the purpose of enabling the user of the elevator to control the motion of the carriage through the belt-shifting apparatus already described.

The parts referred to above are not new, and with slight modifications are in common use.

My safety attachment, which I will now proceed to describe, is controlled in its action by a latch, which is held in place and out of action by the inside pressure of the hoisting-rope, (when on the drum,) and is released and thrown into action whenever the rope on the drum becomes slack.

My device, as represented, acts through the rope R^4 directly on the belt-shifting rope P′, to which the rope R^4 is attached by a clasp, R^5, although the rope R^4 might operate the belt-shifter by means of a pulley on that shaft.

The latch B is connected to the interior of the hoisting-drum T, as shown in Fig. 2, and is adapted to slide in and out, its tendency to outward motion being given it by the spring B^2, said spring being adjusted as to tension by the screw-follower B^3.

B^5 is a screw or pin, the point of which rests in a slot made in the latch B, as shown in Fig. 2, and serves to limit the motion of the latch.

B^4 is a holding-jack, one end of which rests on the latch B, and the other end is pressed upon by the rope T^3 on the hoisting-drum. In the drawings, Fig. 2, the holding-jack B^4 is represented as being held against the latch B by the last coil of the rope T^3, although any of the coils would work as well while on the drum, the last coil being selected for the reason that it is always on the drum, even when the elevator-carriage is at its lowest point.

It is obvious from the construction of the latch B and the holding-jack B^4 that so long as the jack B^4 is held firmly (by the pressure of the rope T^3) against the latch B it (the latch) cannot slide out, and also that in case the rope T^3 is slack, then the jack will no longer hold the latch B, and its spring B^2 will throw it out so that its end will project beyond the face of the drum and come in contact with the lever R, the function of which is explained

below. The jack B^4, Fig. 2, has made in it a slot, *b*, which receives the end of the holding-screw *b'*. This device allows the jack to move a limited distance longitudinally, but will not allow it to fall out of its place. The lever R is pivoted at R^2 and has at its lower end R', a rope or chain, R^4, which passes over a roller, R^3, and continues downward to the clasp R^5, which connects it with the shifter-rope P'.

The action of my device is as follows, (the machinery working to lower the elevator-carriage, the belt being set for that purpose:) If the rope T^3 slacks on the drum T' from the fact that the elevator-carriage has been accidentally stopped, or for any other reason, then, there being no pressure on the jack B^4, it will cease to hold the latch B, will immediately be thrown out by the spring B^2, and, its end coming in contact with the lever R R' as the drum T' revolves, will throw the lever over and cause its lower end, R' to draw on the rope R^4, and through it the rope P', and thus act on the belt-shifting device and cause the hoisting machinery to stop, thus preventing any entanglement of the rope T^3 with the machinery.

I claim—

1. The combination of the hoisting-drum, provided with the spring-pressed latch and a latch-holding jack adapted to hold the latch inoperative by the pressure of the hoisting-rope, with the lever R R' and the belt-shifting devices, all substantially as described.

2. The combination of the drum T, jack B^4, and latch B with the lever R R', rope R^4, roller R^3, and shifting-rope P', all operating together substantially as described, and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 16th day of October, A. D. 1888.

WILLIAM E. NICKERSON.

Witnesses:

FRANK G. PARKER,

MATTHEW M. BLUNT.