

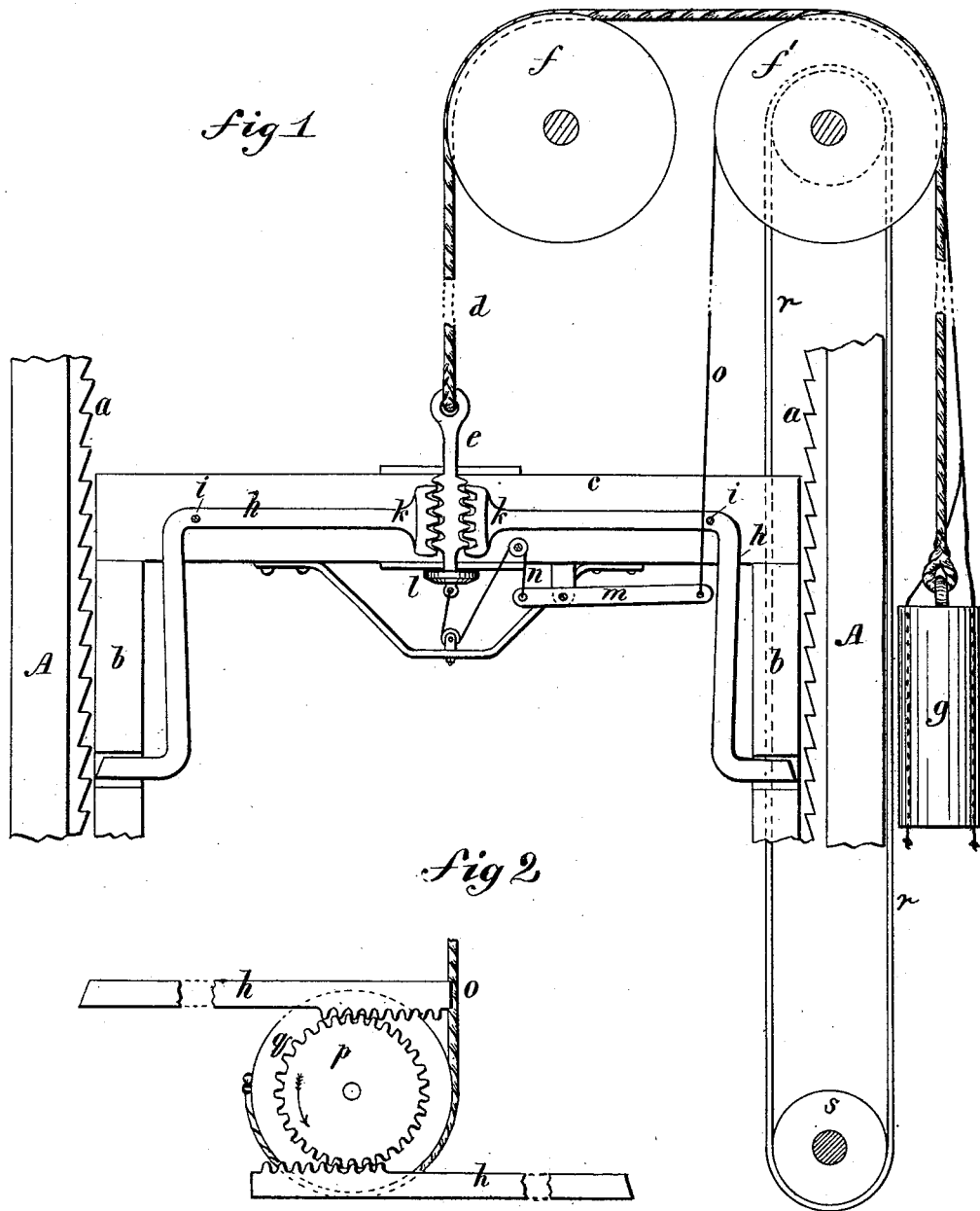
(No Model.)

J. JOHNSTON.

SAFETY STOP FOR ELEVATORS.

No. 266,479.

Patented Oct. 24, 1882.



WITNESSES:

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SAFETY-STOP FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 266,479, dated October 24, 1882.

Application filed June 2, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN JOHNSTON, of the city, county, and State of New York, have invented a new and Improved Safety-Stop for Elevators, of which the following is a full, clear, and exact description.

The object of my invention is to provide reliable and effective means of checking the descent of elevator-cars in case of breakage of the suspension-rope.

To that end my invention consists in stop mechanism that is fitted for operation by a safety-rope, combined with the balance-weight for operation thereby when the suspension-rope breaks, by which means I dispense with extra weights and insure the operation of the stop devices, as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 is a side elevation of an elevator provided with my improved device. Fig. 2 represents a modification of the mechanism for operating the stop-arms.

A A are the posts or guide-timbers of the elevator-car, fitted in the shaft, as usual, and provided on their inner faces with the racks *a a*. *b b* are the side posts, and *c* the upper cross-bar, of the car.

d is a suspension-rope connected to a rod, *e*, that is fitted on the top bar, *c*, of the car, and passing over the drums *f f'*, as usual, and *g* is the balance-weight attached on the end of the rope *d*.

h h are crank-levers pivoted at *i* on the cross-timbers *c*, and extending at their lower ends through the side posts, *b*, in position for engaging the racks *a* when projected. The inner ends of the levers *h* are formed with cog-segments *k*, that engage with cogs formed on the opposite sides of the suspension-rod *e*. The rod *e* is fitted for vertical movement in or on the bar *c*, the upward movement being limited by a collar, *l*, on its lower end.

m is a lever pivoted on the bar *c*, connected by a rope or chain, *n*, to the lower end of the rod *e*, and provided at its outer end with a safety-rope, *o*, that passes over the drum *f* and downward to the balance-weight *g*, through

which the rope passes loosely. I prefer to make the end of the rope *o* double, as shown, and to pass both ends through separate apertures of the weight, so that in case one end should slip or break the other would hold fast, the ends being provided with knots or other devices to prevent escape from the weight.

r represents the hoisting rope or chain, consisting of an endless belt passing around the shaft *s* and the axle of the outer drum, *f'*. The power is transmitted from the driving-belt *r* to the car by means of the frictional connection subsisting between the pulleys *f f'* and rope *d*, and the latter is of sufficient length to admit the travel of the car from the top to the bottom of its well.

In the operation of the elevator the safety-rope *o* is fitted to hang slightly slack to prevent its accidental operation by any lengthening of the suspension-rope *d*. This rope *o* passes backward and forward upon the drum *f'* as the elevator is raised and lowered, and remains inoperative until the suspension-rope breaks, in which case the weight *g* will be suspended by the safety-rope, so that the lever *m* will be drawn upon, and by connection of the lever *m* to the rod *e* the rod will be drawn down, and the ends of the levers *h* being moved down with it, the outer ends of the levers are projected into contact with the rack, thus stopping the car instantly.

In the modification shown in Fig. 2 the pawl-arms *h* are formed as racks, engaging a gear-wheel, *p*, that is on the shaft of a drum, *q*, and the safety-rope *o* passes beneath and partly around the drum *q*, so that when the suspension-rope breaks, by which the car is suspended, the weight, coming upon the rope *o*, will give a partial rotation to the drum *q* in the direction of the arrow and project the arms *h*. These safety devices are of durable character, and, there being no spring, are not liable to get out of order or become inoperative. There is no wear on the safety-rope, and by utilizing the main balance-weight for the operation of the safety-rope I insure the proper operation of the devices.

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

1. In an elevator, the combination, with the suspension-rope *d*, provided with the counter-

balance-weight *g* at its end, and stop mechanism attached to the car, of a safety-rope, *o*, having one end connected to the safety-stop mechanism and its free end passed through
5 the counterbalance-weight of the suspension-rope, substantially as herein shown and described, whereby the safety-rope is adapted to sustain the counterbalance-weight when the suspension-rope breaks, and thereby apply
10 the stop mechanism to arrest the motion of the car, as set forth.

2. The combination of the guide-posts *A*, provided on their inner faces with the racks *a*, crank-levers *h h*, pivoted to the car, and hav-
15 ing cog-segments *k* on their inner ends, cogged

suspension-rod *e*, drums *f f'*, suspension-rope *d*, provided with the counterbalance-weight *g*, safety-rope *o*, passing over one of the drums and through the counterbalance-weight, lever *m*, and rope *n*, substantially as described, and
20 for the purpose set forth.

3. The combination of the pawl-arms *h h*, provided with racks, the gear-wheel *p*, drum *q*, and safety-rope *o*, connected to the balance-weight, substantially as described, for opera-
25 tion as set forth.

JOHN JOHNSTON.

Witnesses:

C. SEDGWICK,
E. M. CLARK.