

(No Model.)

2 Sheets—Sheet 1.

J. HODGES.

AUTOMATIC SAFETY APPLIANCE FOR ELEVATORS.

No. 299,222.

Patented May 27, 1884.

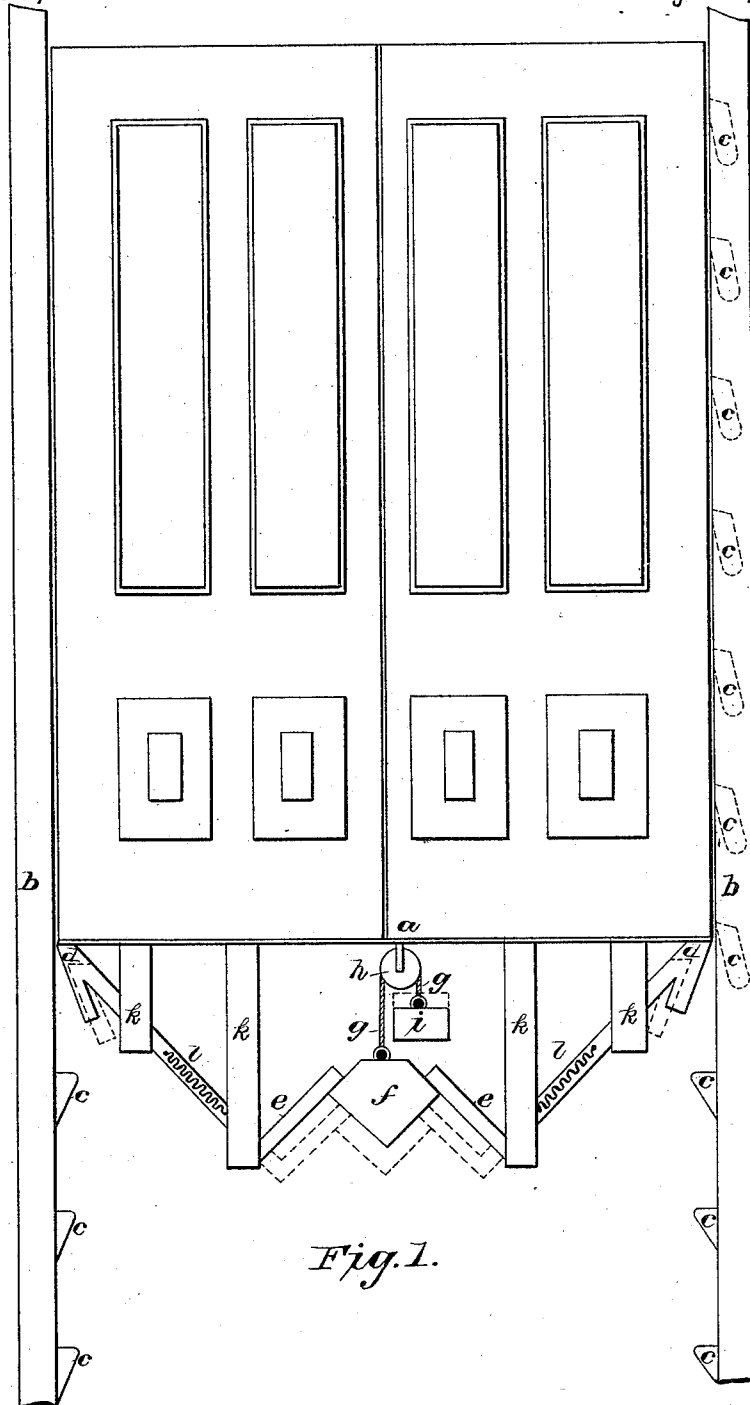


Fig. 1.

Attest,
Wm. J. Panner
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Inventor,
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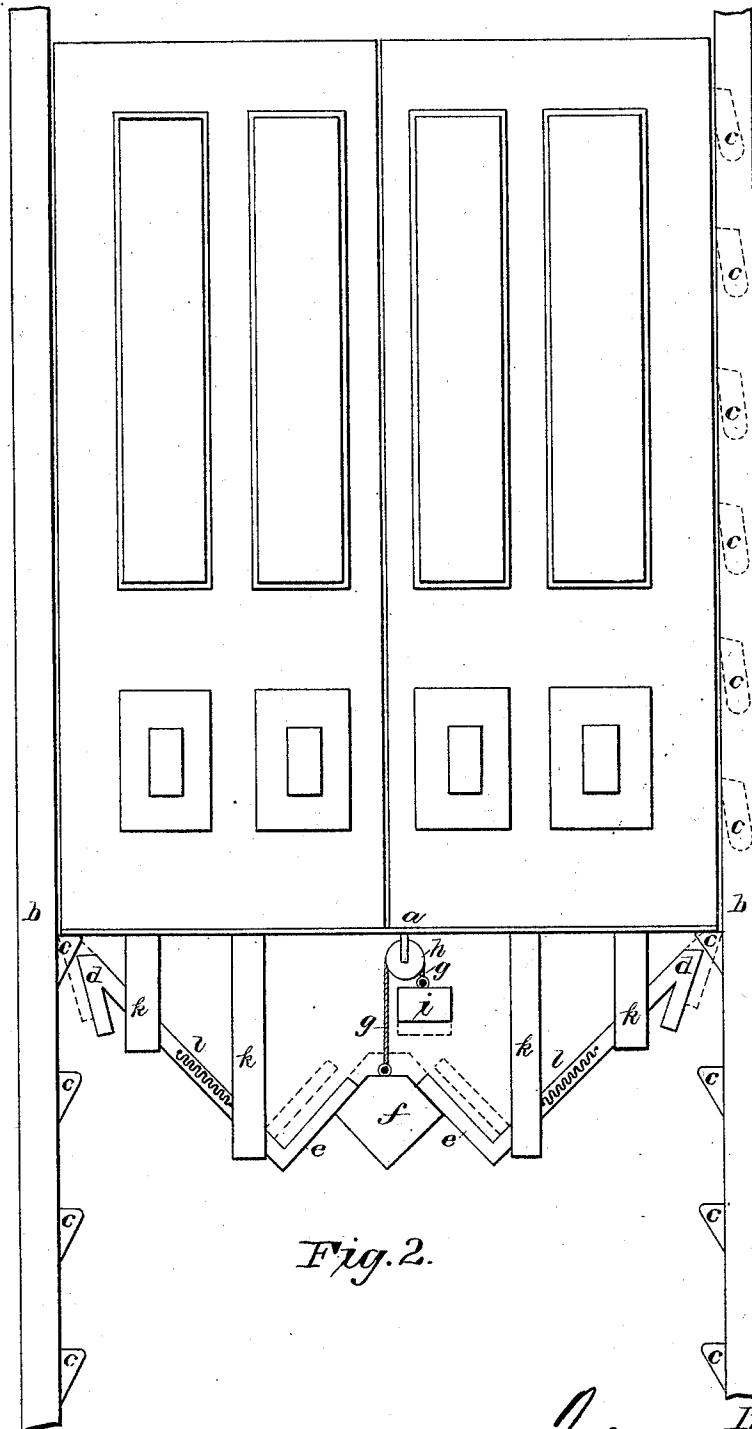


Fig. 2.

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UNITED STATES PATENT OFFICE.

JOHN HODGES, OF WESTFIELD, NEW JERSEY.

AUTOMATIC SAFETY APPLIANCE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 299,222, dated May 27, 1884.

Application filed November 1, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN HODGES, of the town of Westfield, county of Union, and State of New Jersey, have invented a new and useful Improvement in Automatic Safety Appliances for Elevators, which improvement is fully set forth in the following specification.

This invention is an improvement upon the invention covered by Letters Patent granted to me, dated October 23, 1883, No. 287,287, for safety appliance for elevators, as the same is improved by the invention covered by an application filed by me for a safety appliance for elevators in the United States Patent Office on October 1, 1883. In the apparatus shown in my former patent and in said application the elevator, in case of accident, was immediately arrested on its fall upon the withdrawal by the person operating the same of his foot from the treadle inside of the car. In my present invention I dispense with the treadle and substitute therefor mechanism which causes the car to be arrested automatically in case it should fall by the breaking of the ropes or other accident.

The figures of the accompanying drawings represent my improvements.

Figure 1 is a front view of an elevator-car and its upright side supports with my improvements attached, as the same appears when the elevator-car is descending. Fig. 2 is a front view of an elevator-car and its upright side supports with my improvement attached, as the same appears when the elevator-car has dropped, as in case of accident, so as to engage the dogs or projections.

In the usual upright supports or posts between which the elevator-car slides I provide a series of dogs or projections, so pivoted or hinged that they will at once be sprung out or fall out by their own gravity and rotate into their normal position to engage the bottom of the elevator-car should it descend against them. Immediately below and on each side of the parts of the floor of the elevator-car which would rest upon the dogs or projecting hinged pieces when they have assumed their normal position I construct, of iron or wood, a bar or piece, the object of which is to cause the dogs or projections to be raised up out of the

way of the floor or bottom of the elevator-car, so as to enable the same to descend. These side pieces are so beveled that when they are raised up against the bottom of the car the edges of the hinged projections are engaged by them as the elevator descends, and the projections are pushed back out of the way of the floor of the elevator-car, so as to enable it to proceed in its descent. In passing upward the elevator-car itself pushes the projections out of the way; but in descending the hinged projections are only pushed out of the way when the beveled pieces above spoken of are in position. A weight, acting by means of a pulley and rope, serves to raise the beveled piece into position, so as to cause the beveled piece to engage the dogs or projections and push them out of the way of the descending elevator-car. A spring on each side operates in opposition to this weight, the tendency of the springs being to cause the beveled pieces to be withdrawn instantly, so as not to engage the dogs or projections designed to arrest the car. In case any accident should cause the fall of the car, the relation of this weight to the springs is instantly so disturbed that the springs are enabled to act to withdraw the beveled pieces, thus causing the car to be immediately arrested in its descent by the dogs or projections.

In the drawings, *a* is the floor of the elevator-car; *b b*, the vertical supports, up and down which it slides. *c c* are hinged dogs or projecting pieces. *d d* are the beveled pieces that serve to press back the dogs into such a position that they will allow the elevator-car to pass downward without being arrested. *e e* are arms attached at right angles to the beveled pieces *d d*. *f* is a piece upon which the parts *e e* rest. *g* is a rope upon which *f* hangs. *h* is a pulley over which said rope passes. *i* is a weight attached to said rope. *k k* are the supports in which the piece *d* slides. *l l* are springs, each fastened to its support *k*, and also to the bar or piece *d*, in such manner as to tend to withdraw the part *d* out of the way of the projection *c*.

The operation of the mechanism shown in the drawings is as follows: When the weight is exerting its normal pressure against the action

of the springs, the beveled pieces *d* are forced upward and outward in such a manner as to engage the dogs or projections *c*; but should the supports of the elevator-car give way, the relation between the force exerted by the weight *i* and the force exerted by the tension of the springs *l* is instantly disturbed, so as to cause the springs *l* to at once act to withdraw the beveled pieces *d*, when the dogs *c* instantly engage the bottom of the car. The weight of the part *f* and of the parts resting upon it acts in conjunction with the springs and in opposition to the weight *i*.

In carrying out this invention the use of the spring *l* is not absolutely necessary. The weight of the part *f* and of the parts resting upon it may be so proportioned to the weight of *i* that the apparatus will arrest the car, in case of accident, without requiring a spring; but I greatly prefer a spring, on account of the certainty and quickness of its action.

It will be evident from the foregoing description that the moment the elevator-car falls, in case of accident, the tension upon the rope *g*, supporting the weight *i*, is instantaneously lessened, thus enabling the spring *l* to operate, and as the slightest withdrawal of the beveled parts *d* prevents the dogs *c* from being forced out of the way of the elevator-car, the car is instantly arrested with absolute certainty.

It is obvious that the weight *i* must be heavy enough to overcome the gravity of the part *f* and the parts resting upon it, and also the tension of the springs.

It is obvious that if the part *f*, instead of being suspended by a rope, as shown, were suspended to the bottom of the car by means of a spring of suitable tension, such a contrivance would be a mechanical equivalent to that which I have described, although, in my opinion, an inferior equivalent.

What I claim, and desire to secure by Letters Patent, is—

1. Projections adapted to arrest an elevator-car, in combination with mechanism to engage the projections and throw them out of the way of the elevator-car as it descends, and a spring or springs operating to withdraw said mechanism which engages the projections, so as to allow the projections to stop the descending car, and mechanism adapted to hold the mechanism engaging the projections in the position which engages the projections, except in case of accident, substantially as described.

2. The projections *c*, the beveled piece *d*, the spring *l*, and the weight *i*, or its equivalent, arranged and operating substantially as described.

3. The projections *c*, the pieces *d* *e*, the piece *f*, the spring *l*, the rope *g*, with suitable pulley or support, and the weight *i*, arranged and operating substantially as described.

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

JNO. HODGES.

Witnesses:

JOHN MCCLURE,
LOUIS B. ROLSTON.