

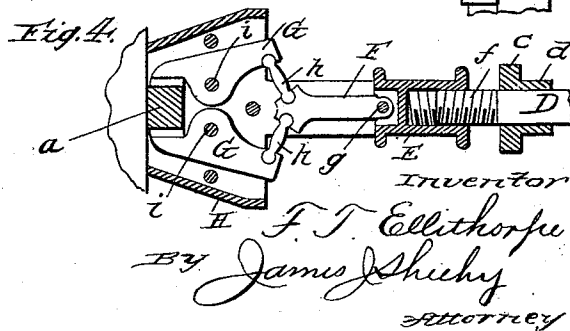
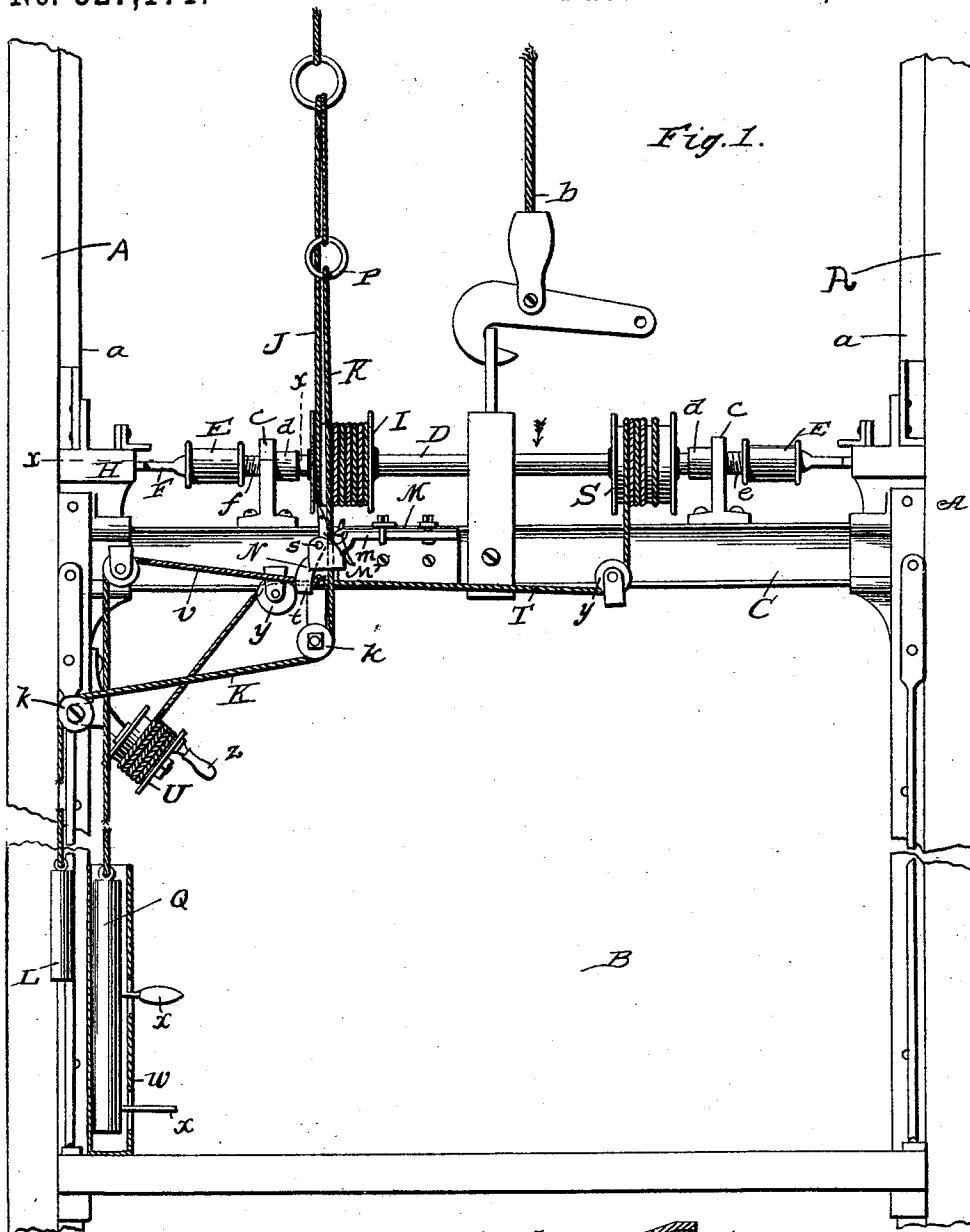
(No Model.)

2 Sheets—Sheet 1.

F. T. ELLITHORPE.
SAFETY DEVICE FOR ELEVATORS.

No. 527,171.

Patented Oct. 9, 1894.



Witnesses:
E. J. Quader
W. F. Matthews

Inventor
F. T. Ellithorpe
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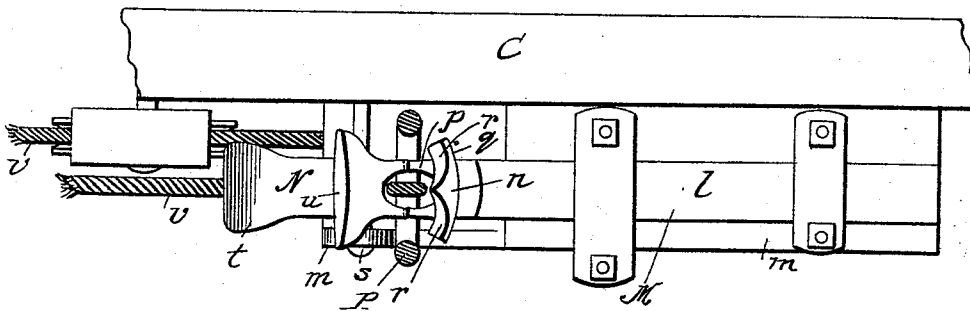
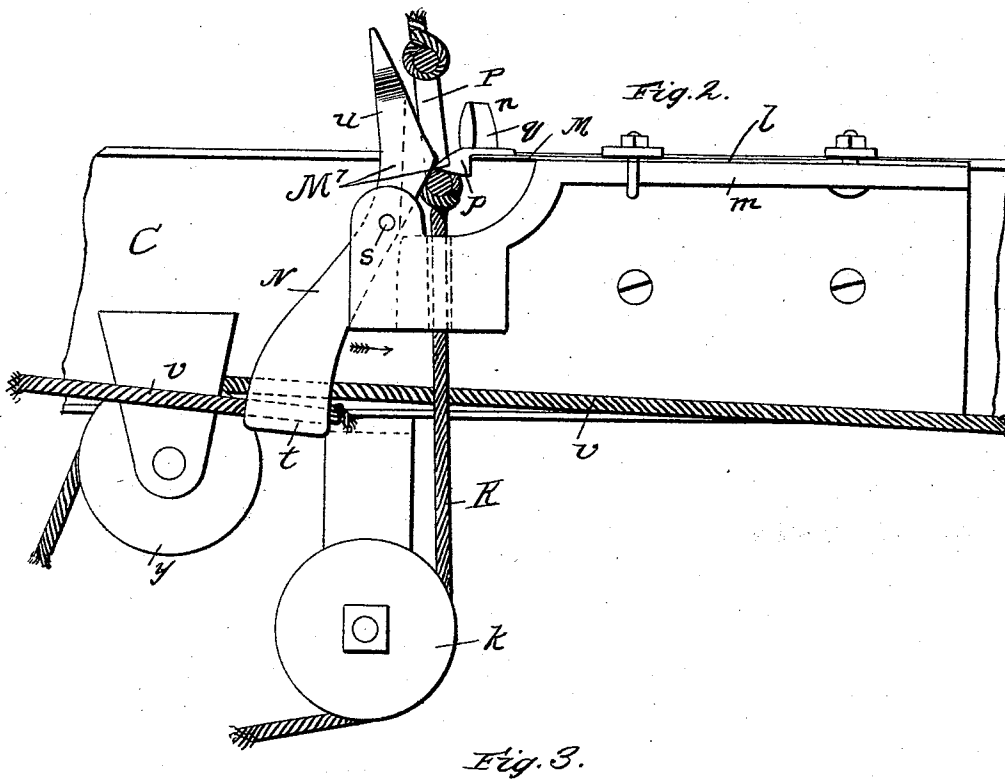
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R. P. Rader
R. P. Matthews

Inventor:
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UNITED STATES PATENT OFFICE.

FREDERICK T. ELLITHORPE, OF NEWARK, NEW JERSEY.

SAFETY DEVICE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 527,171, dated October 9, 1894.

Application filed July 3, 1894. Serial No. 516,459. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK T. ELLITHORPE, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Safety Devices for Elevators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in safety devices for elevators, and it has for one of its objects to provide means whereby safety devices, such for instance as those disclosed in the Letters Patent of A. C. Ellithorpe, No. 376,374, may be controlled and operated by the elevator conductor, so as to enable him to brake or stop the car when it has gained a dangerous momentum or for any other reason, and this without in any manner interfering with the automatic action of the devices incident to the breaking of the hoisting rope or cable, or running away of the car.

Another object of the invention is to provide means whereby the elevator conductor, without leaving the car, may quickly and conveniently release the safety devices or brakes and return the several parts to their normal position, so as to permit of the car being lowered when it has been stopped between floors by the safety devices.

Other objects and advantages of the invention will be fully understood from the following description and claims when taken in connection with the annexed drawings, in which—

Figure 1, is a front elevation of an elevator equipped with my improvements; the several parts being shown in the position which they assume when the safety devices have been set to stop the car. Fig. 2, is an enlarged, detail elevation illustrating the keeper for holding the rope or cable which takes over the governor pulley. Fig. 3, is a detail, plan view of such keeper, and Fig. 4, is a detail section illustrating one pair of gripping devices and a portion of the mechanism for adjusting the same.

Referring by letter to said drawings:—A, indicates the ordinary standards or uprights of an elevator which are provided with tracks

as *a*, and B, indicates the car which is provided with a transverse beam C, but which otherwise may be of the ordinary or any approved construction. The said beam C, of the car serves for the connection of the hoisting cable *b*, and also serves to support the shaft D, illustrated in Fig. 1. This shaft D, is journaled in suitable bearings as *c*, on the beam C, and is fixed against endwise play by collars as *d*; and it has its ends screw-threaded right and left as indicated by *e*, and *f*, to engage the internally threaded sockets E, the outer extremities of which are secured by bolts *g*, to flattened links F, having enlarged outer extremities as shown in Fig. 4. These outer ends of the links F, are connected with the inner ends of gripping levers G, by pivotal links *h*, and the said levers G, have their fulcrums at *i*, in boxings H, carried by the beam C, whereby it will be seen that when the shaft D, is rotated in one direction, the gripping levers will be caused to positively and securely engage the tracks *a*, and arrest the car from descending, while when said shaft is rotated in the other direction, the gripping ends of said levers will be moved out of engagement with the tracks *a*.

The shaft D, is provided as shown in Fig. 1, with a drum I, which is keyed or otherwise fixed thereon, and on this drum is wound a cable as J, which is designed to take over or around a governor sheave or pulley such as disclosed in the aforesaid Letters Patent or be connected to some similar or equivalent retarding device. In the said Letters Patent all of the construction thus far described is disclosed, and a cable C, similar to the cable J, of the present application, is shown as connected by a hooked link with a keeper spring on the car; the said keeper spring being designed to normally hold the cable C, and being also designed to release the cable when the movement of the same is retarded by the governor sheave so as to enable the cable to rotate the shaft D, and force the gripping levers G, against the tracks *a* to stop the car.

The construction disclosed in the present application operates automatically in a manner similar to that disclosed in the Patent No. 376,374, but the mechanism for normally holding the cable J, upon the drum I, is different. For such purpose I provide a rope or chain K,

which takes around sheaves *k*, on the car and is connected at one end with the cable J, and has a weight L, at its opposite end, and a keeper M⁷ comprising two members M, N, which are arranged on the car and are designed to engage a ring P, or other suitable device carried by the rope or chain K.

The keeper member M, preferably comprises a spring plate *l*, which is secured by clips on a bracket *m*, connected to the beam C, and a head *n*, which is of a peculiar construction and has the beveled and bifurcated portion *p*, and the curved upper portion *q*, which is provided with the inclined grooves *r*, (see Fig. 3,) designed and adapted to guide the ring P, and prevent the same from being caught by the branches of the bifurcated portion *p*. The keeper member N, is fulcrumed in suitable bearings in the bracket *m*, as shown at *s*, and it preferably has the lower weighted portion *t*, and the upper beveled portion *u*. Said member N, has its lower weighted end *t*, connected by a rope or chain *v*, with a weight Q, and it is normally held by such weight against the member M, as shown in Fig. 2, so as to enable it in conjunction with such member M, to normally retain the ring P, and thereby hold the cable J, and prevent the same from rotating the shaft D.

The weight Q, is arranged in a suitable casing as *w*, in the car and it is provided with one or more lateral branches *x*, which extend through slots in the casing and are designed to enable the elevator conductor to conveniently lift the weight with his hand or foot. When the weight Q, is so lifted, it will be seen that the lower, heavy end of the keeper member N, will swing in the direction indicated by arrow (see Fig. 2.) and will effect the release of the ring P, on the rope or chain K, so as to permit the cable J, to wind off of the drum I, and rotate the shaft D, and set the gripping levers against the tracks and thereby gradually stop the car.

In order that the safety devices may be conveniently released so as to permit of the car being raised or lowered to a floor, after it has been stopped by the action of the safety devices, I provide the drum S, on the shaft D, and the rope or chain T, which is wound upon said drum S, and takes around sheaves as *y*, on the car and is wound upon a drum arranged in the car as shown. This latter drum U, has a handle as *z*; and by the provision of the same together with the rope T, and drum S, it will be seen that when the parts have effected a setting of the gripping devices to stop the car and it is desired to bring the parts back to their normal positions to release the gripping devices, the operator may without leaving the platform of the car, rotate the shaft D, in the direction indicated by arrow so as to wind the cable J, (which is wound in a direction opposite to the rope T,) upon the drum I. As the cable J, is wound upon the drum I, the gripping levers G, will be moved away from the tracks *a*, and the

rope K, by reason of the weight L, will be held taut and drawn downwardly so as to enable the ring P, to engage the beveled portion *u*, of the keeper member N, and be guided under said keeper member N, and the keeper member M, to the position shown in Fig. 2. It is necessary however, when the ring P reaches the keeper member N, for the operator to lift the weight Q, so as to enable the ring P, to push the upper portion of the keeper N, away from the keeper M, and pass to the position shown in Fig. 2.

As before described the cable J, is designed to take over or around a governor sheave such as disclosed in the aforesaid Letters Patent or be connected to some equivalent retarding device and the ring P, is designed to be engaged and normally held by the keeper M⁷, as better shown in Fig. 2. Consequently it will be seen that when the hoisting cable breaks or the car runs away and the movement of the cable J, is retarded by the governor sheave or similar device, the weights L, and Q, will be overcome and the ring P, will be pulled out of engagement with the keeper, when the shaft D, will be rotated and the gripping levers G, forced against the tracks *a*, to stop the car.

The manual operation of the devices is just as simple and reliable as the automatic operation, it being simply necessary when the car has gained a dangerous momentum or when any of the machinery has broken or when the car gets beyond the control of the operator, for him to raise the weight L, so as to permit the keeper member N, to swing away from the keeper member M, and release the ring P, as before described.

I have specifically described the construction and relative arrangement of the parts of my invention in order to impart a full, clear, and exact understanding of the same, but I do not desire to be understood as confining myself to such construction and arrangement of parts as such changes or modifications may be made in practice as fairly fall within the scope of the invention. I furthermore do not desire to be understood as confining myself to the application of my invention to the safety devices disclosed by the Letters Patent No. 376,374, as they may be employed in conjunction with any safety device to which they are applicable.

I have described the safety devices comprising the shaft D, &c., as being preferably arranged on the beam C, at the top of the car. I do not desire however to be understood as confining myself to this arrangement of the safety devices as they might be placed on the bottom or other suitable part of a car and yet be operated automatically and manually in the manner described.

Having described my invention, what I claim is—

1. In an elevator, the combination of a car, standards or guides therefor, a rotary shaft carried by the car a drum S on said shaft,

devices adapted to be forced into engagement with the standards or guides by the rotation of the shaft in one direction, a drum arranged in the car, and a rope or chain connecting said drum in the car and the drum on the rotary shaft, substantially as and for the purpose set forth.

2. In an elevator, the combination of a car, a rotary shaft carried by the car a drum I on said shaft, a cable wound on the drum I of the rotary shaft, a keeper mounted on the car, a connection intermediate of the cable and the keeper, and devices under the control of the elevator conductor connected with and adapted to normally retain the keeper in engagement with the connection intermediate of the same and the cable, substantially as and for the purpose set forth.

3. In an elevator the combination of a car, a rotary shaft carried by the car a drum I, on said shaft, a cable wound on the drum I of the rotary shaft, a keeper mounted on the car, a connection intermediate of the cable and the keeper, and a weight connected with the keeper and adapted to normally retain the keeper in engagement with the connection intermediate of the same and the cable; said weight being so arranged that it may be raised by the elevator conductor to release the connection from the keeper, substantially as specified.

4. In an elevator, the combination of a car, a rotary shaft carried by the car drums I, S, on said shaft a drum arranged in the car, a rope or chain connecting said drum in the car and the drum S, so that the shaft may be rotated in one direction by a person within the car, a cable J, wound on the drum I, of the rotary shaft, a keeper mounted on the car, a connection intermediate of the cable and the keeper and devices under the control of the elevator conductor connected with and adapted to normally retain the keeper in engagement with the connection intermediate of the same and the cable, substantially as specified.

5. In an elevator, the combination of a car, a rotary shaft carried by the car drums I, S, on said shaft a drum arranged in the car, a rope or chain connecting said drum in the car and the drum S, so that the shaft may be rotated in one direction by a person within a car, a cable J, wound on the drum I, of the rotary shaft, a keeper mounted on the car, a weight as L, and rope or chain connecting the weight L, and the cable and adapted to be engaged and normally retained by the keeper, substantially as specified.

6. In an elevator, the combination of a car, a rotary shaft carried by the car drums I, S, on said shaft a drum arranged in the car and connected by a rope or chain with the drum S, a cable J, wound on the drum I, of the rotary shaft, a keeper mounted on the car, a

weight L, a rope or chain connecting the weight L, and the cable and adapted to be engaged by the keeper, and a weight Q, connected with the keeper and adapted to normally retain it in engagement with the rope or chain between the cable and the weight L; said weight Q, being so arranged in the car as to be under the control of the conductor, substantially as specified.

7. In an elevator the combination of a car, a rotary shaft carried by the car a drum I, on said shaft a cable J, wound on the drum I, a weight as L, a rope or chain connecting the weight and the cable, and provided with a ring, a keeper member M, carried by the car and comprising a spring plate and a head having the upper grooved portion and the lower beveled portion, a pivoted keeper member N, arranged adjacent to the keeper member M, and having its lower portion weighted and its upper portion beveled or inclined, and a suitable means for normally holding the keeper member N, against the keeper member M, so as to enable the two to retain the ring, substantially as specified.

8. In an elevator, the combination of a car, a rotary shaft carried by the car a drum I, on said shaft a keeper member M, carried by the car and comprising a spring plate and a head having the upper grooved portion and the lower beveled portion, a pivoted keeper member N, arranged adjacent to the keeper member M, and having its lower portion weighted and its upper portion beveled or inclined, a suitable means for normally holding the member N, against the member M, a cable J, wound upon the drum I, and a cord or chain connected to said cable and carrying a device adapted to be engaged and normally retained by the keeper members M, N, substantially as specified.

9. In an elevator, the combination of a car, a rotary shaft carried by the car, a wheel or drum S, on said shaft, devices adapted to be forced into engagement with the standards or guides by the rotation of the shaft in one direction, a wheel or drum arranged in the car, and a connection between the wheel or drum in the car and the wheel or drum on the shaft, substantially as specified.

10. In an elevator, the combination of a car, a rotary shaft carried by the car, a drum I, on said shaft, a cable wound on the drum of the rotary shaft, a keeper mounted on the car, and devices under the control of the attendant and adapted to normally enable the keeper to hold the cable, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK T. ELLITHORPE.

Witnesses:

G. H. C. WILLIAMS,

JOSIAH T. LOVEJOY.