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D. F. GREASER.

SAFETY DEVICE FOR ELEVATORS.

APPLICATION FILED MAR. 22, 1905.

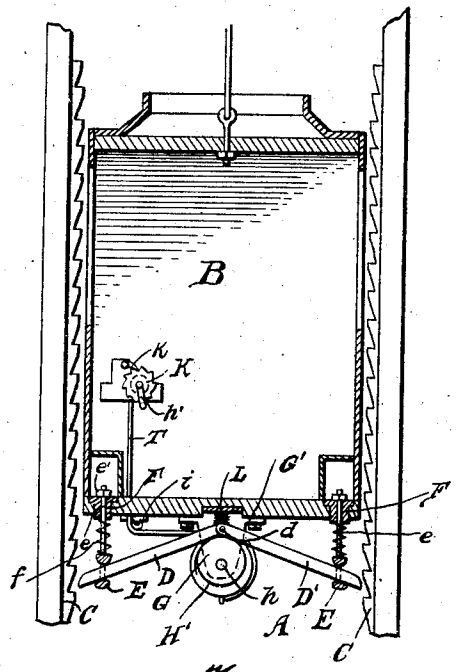


Fig. 1.

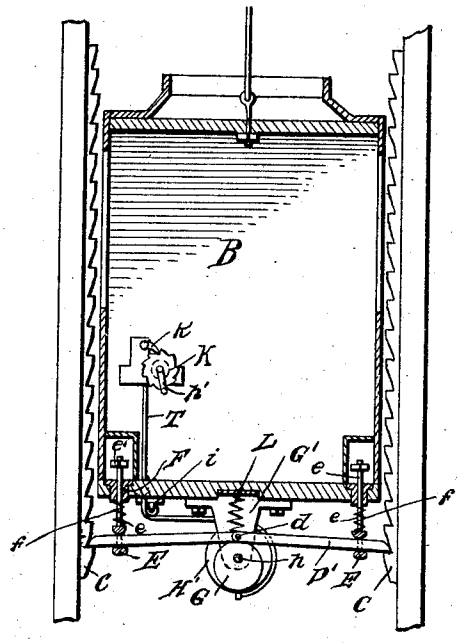


Fig. 2.

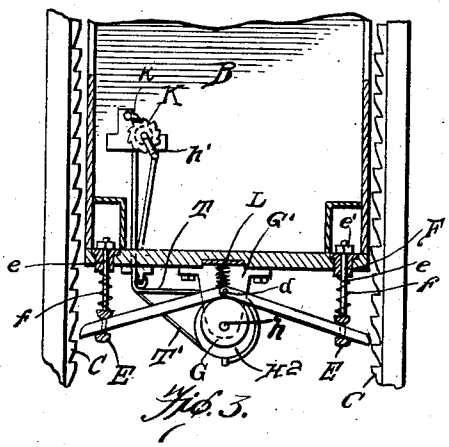


Fig. 3.

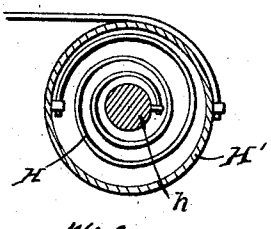


Fig. 4.

Witnesses

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SAFETY DEVICE FOR ELEVATORS.

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To all whom it may concern:

Be it known that I, DANIEL F. GREASER, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Safety Devices for Elevators, of which the following is a specification.

My invention relates to safety devices for elevators, and has for its object the production of a simple and effective attachment for this purpose which may be readily and economically applied to the elevators at present in use, either passenger or freight, whereby the car may be instantly checked and held locked against precipitate descent, in cases of accidental breakage of the lifting cable or other means of hoisting the same, or where, from other and extraneous causes the car may become unmanageable by the operator, and is in danger of falling.

A further object of my invention is to provide convenient means whereby the device may be released, and maintained in such released position until again brought into operative position, and to further provide means whereby the impact to and by the sudden locking and stoppage of the car, is removed or reduced to the minimum.

My invention further comprises certain novel features of construction and arrangement of parts, all of which will be hereinafter more fully described and particularly pointed out in the appended claims.

In the drawings forming part of this specification, similar letters of reference indicate corresponding parts in all the figures and whereon:

Figure 1, represents a sectional elevation of an elevator car and a portion of the elevator well, showing my invention applied thereto and in unlocked position. Fig. 2, represents a similar view showing the same in locked position. Fig. 3, represents a detail view of a modified form of means for operating the locking device. Fig. 4 is a sectional view of the casing H^1, showing the spring contained therein.

Referring to said drawing:—A, designates the elevator shaft within which the car B, travels in the usual manner, and C, designates a series of steps arranged the whole length of the well and preferably at opposite sides thereof, although they may be arranged diagonally in the corners, if so desired.

D, D^1, designate two bars, which, as shown, are pivotally connected at their inner ends as represented at *d*, while their outer free ends, lie in close proximity to the steps C, at each side of the elevator well, being supported in guide-eyes E, or by other suitable and convenient means. These guide-eyes each have a stem or pintle *e*, projecting therefrom which passes up through an opening in a substantial bushing F, fixed in the floor of the car, and is provided at its upper extremity with a washer or other head e^1, which limits the downward movement thereof.

The inner, or connected, ends of the bars D, D′, are kept elevated above the plane in which their outer free ends rest, while in their locked or inoperative position, through the medium of a cam or eccentric G, the said cam or eccentric being supported in a bracket G′, secured to the underside of the floor. A torsional spring H, is wound around the eccentric shaft *h*, within the casing H′ and is so fixed that its tendency is to keep the cam or eccentric in raised position, thereby maintaining the inner ends of the bars D, D′, in their lifted position and keeping their free ends out of engagement with the steps C, in the well.

A cable or chain T, is secured at one end to the torsional spring casing H′, and its other end is guided over suitable pulleys *i*, and is wound around an appropriate drum K, located within convenient reach of the elevator attendant. A retaining device, such as a pawl and ratchet, represented at *k*, is provided for maintaining the cable or chain in a fairly taut condition ready for any emergency, and the attendant, by turning a handle *h*′, on the end of the drum K, will wind said cable or chain thereon, turning the eccentric or cam against the resistance of the torsional spring on its supporting shaft, whereupon a spring L, interposed between the upper pivoteds end of the bars D, D′, will force the latter downwardly, thereby moving their outer free ends into engagement with the steps C, and so locking the car against further descent.

In order to lessen the shock and to minimize the impact caused by the sudden stopping of the car, as just described, substantial springs *f*, are interposed between the guide-eyes E, and the bottom of the car which will yield under its weight and so form an effective cushion. The torsional spring H, will, when the car has been lifted, turn the eccentric or cam G through the medium of the shaft *h*, lifting the pivoted ends of the bars D, D′, into the initial position, while the springs *f*, will restore the guide-eyes E, to their former position, thereby releasing the bars from their engagement with the steps and permitting the car to freely move within the well.

In Fig. 3, I have shown a construction wherein the torsional spring is dispensed with and by which the pivoted ends of the bars D, D′, are positively lifted. To accomplish this end I provide an additional chain or cable T′, for the casing H^2 which is fastened thereto, so as to effect rotation thereof in the opposite direction, its other end being wound upon the drum K, oppositely to the one T, so that by turning the handle *h*, in one direction, it will be obvious that the cam or eccentric

may be moved to permit the pivoted ends of the arms to fall, as previously, and by turning it in the opposite direction they will be lifted.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is as follows:

1. In a safety device for elevators, the combination with a shaft provided with oppositely arranged steps, and a car, of a pair of sliding bars adapted to be projected to engage the steps, a shaft, means carried by the shaft adapted to engage the bars and hold their inner ends elevated, mechanism controllable from the car for revolving the shaft, and means engaging the bars whereby when the shaft is revolved, the bars are projected to engage the steps.

2. In a safety device for elevators, the combination with a shaft provided with oppositely arranged steps, and a car, of a pair of sliding bars adapted to be projected to engage the steps, a shaft, a cam carried by the shaft adapted to engage the bars and hold their inner ends elevated, mechanism for revolving the shaft, and means engaging the inner ends of the bars to hold them in close contact with the cam so that when the shaft and cam are revolved, the inner ends of the bars descend and the outer ends are projected to engage the steps.

3. In a safety device for elevators, the combination with a shaft provided with oppositely arranged steps, and a car, of a pair of bars pivotally connected together and adapted to be projected in opposite directions to engage the steps, a shaft mounted below the floor of the car, means carried by said shaft adapted to engage the bars at their pivotal point and hold the same elevated, mechanism for revolving the shaft, and means engaging the pivotal point from above to hold the same against said means, whereby when the shaft is revolved the pivotal point of the bars descends and the ends are projected to engage the steps.

4. In a safety device for elevators, the combination with a shaft provided with oppositely arranged steps, and a car, of a pair of bars pivotally connected together and adapted to be projected in opposite directions to engage the steps, a shaft mounted below the floor of the car, a cam carried by said shaft adapted to engage the bars at their pivotal point and hold the pivotal point elevated, mechanism for revolving the shaft and cam, and means engaging the car and the pivotal point of the bars for forcing the pivotal point downwardly and the ends outwardly, as the shaft revolves.

5. In a safety device for elevators, the combination with a shaft provided with oppositely arranged steps, and a car, of a pair of sliding bars adapted to be projected to engage the steps, a shaft journaled below the floor of the car, means carried by the shaft adapted to engage the inner ends of said bars and hold them elevated, mechanism controllable from the interior of the car for revolving the shaft, and means for forcing the inner ends downwardly and the outer ends outwardly to engage the steps.

6. In a safety device for elevators, the combination with a shaft provided with oppositely arranged steps, and a car, of a pair of sliding bars adapted to be projected to engage the steps, a shaft, a cam carried by the shaft and adapted to engage the inner ends of said bars and hold them elevated, mechanism controllable from the interior of the car for revolving the shaft, and means for forcing the inner ends downwardly and the outer ends outwardly as the shaft revolves to engage the steps.

7. In a safety device for elevators, the combination with a shaft provided with oppositely arranged steps, and a car, of a pair of sliding bars adapted to be projected to engage the steps, a shaft, a cam carried by said shaft adapted to engage the inner ends of said bars and hold them elevated, mechanism controllable from the interior of the car for revolving the shaft, means for forcing the inner ends downwardly and the outer ends outwardly as the shaft revolves to engage the steps, and spring actuated guiding means in which the terminals of the bars are adapted to slide.

8. In a safety device for elevators, the combination with a shaft provided with oppositely arranged steps, and a car, of a pair of slidingly mounted bars carried below the floor of the car and adapted to be projected in opposite directions to engage the steps, a shaft mounted below the floor of the car, means for rotating the shaft manually, automatic means for rotating the shaft in an opposite direction, means carried by the shaft whereby the inner ends of the bars are elevated and the outer ends held out of engagement with the steps, and means for forcing the inner ends of the bars downwardly as the shaft is rotated so that the outer ends are projected to engage the steps.

9. In a safety device for elevators, the combination with a shaft provided with oppositely arranged steps, and a car, of a pair of slidingly mounted bars carried below the floor of the car and adapted to be projected in opposite directions to engage the steps, a shaft mounted below the floor of the car, means for rotating the shaft manually, automatic means for rotating it in opposite direction, means carried by the shaft whereby the inner ends of the bars are elevated and the outer ends held out of engagement with the steps, means for forcing the inner ends of the bars downwardly as the shaft is rotated so that the outer ends are projected to engage the steps, and guiding means for the terminals of the bars.

10. In a safety device for elevators, the combination with a shaft provided with oppositely arranged steps, and a car, of a pair of sliding bars adapted to be projected to engage the steps, a shaft, means carried by the shaft adapted to engage the bars and hold their inner ends elevated, mechanism controllable from the car for revolving the shaft, means engaging the bars whereby when the shaft is revolved, the bars are projected to engage the steps, and means for giving a cushion to the car as the ends of the bars suddenly engage the steps.

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

DANIEL F. GREASER.

Witnesses:
J. A. RENNIE,
A. B. MONSON.