

(No Model.)

D. W. KNIGHT.
SAFETY ATTACHMENT FOR ELEVATORS.

No. 603,644.

Patented May 10, 1898.

Fig. 1.

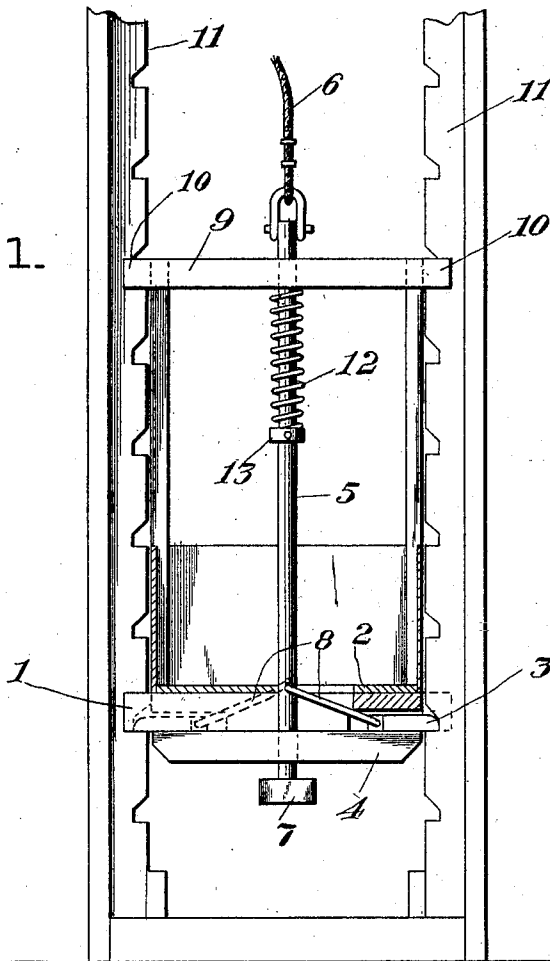
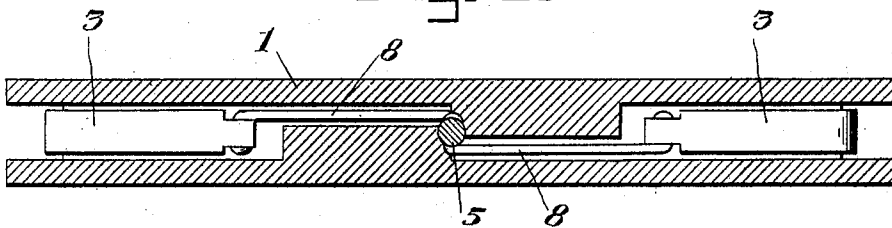


Fig. 2.



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SAFETY ATTACHMENT FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 603,644, dated May 10, 1898.

Application filed July 21, 1897. Serial No. 645,379. (No model.)

To all whom it may concern:

Be it known that I, DAVID W. KNIGHT, of Newman, in the county of Douglas and State of Illinois, have invented certain new and useful Improvements in Safety Attachments for Elevators; and I do hereby 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.

This invention relates to improvements in safety attachments for elevators of that class wherein the attachment is carried by and movable with the cage or car in a manner to engage with stationary racks on the upright guides for the elevator-cage; and the object is to provide an improved construction for arresting the fall of the elevator cage or car in the event of the suspension-cable parting or other accident happening to the mechanism by which the car is supported, the attachments being automatically thrown into engagement with the racks by the action of an impelling-spring, which under normal conditions remains inactive, and the weight of the load or cage, which completes the outward throw or movement of the dogs.

With these ends in view the invention consists in the combination, with elevator-racks and a cage or car, of a slidable rod having a head at its lower end to limit its vertical movement with relation to the car, a spring acting against said rod, dogs adapted for engagement with the racks, and links attached to the rod and the dogs, the rod and dogs arranged to be moved by the spring for the dogs to have slight engagement with the racks, and the weight of the cage acting on said links to force the dogs into complete engagement with the racks, all as hereinafter more fully described and claimed.

To enable others to understand my invention, I have illustrated one embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is an elevation of part of the guides, the rack-bars, and a cage, showing my improved safety appliance adjusted in operative relation to the cage. Fig. 2 is a horizontal sectional view, partly in plan, of a part of a cage or car and illustrating guides for

the slidable dogs, together with the operative connections between said dogs and the vertically-movable rod.

Like numerals of reference denote corresponding parts in both figures of the drawings.

The cage or car which I may employ is of any suitable construction preferred by a mechanic skilled in the calling, and in Fig. 1 I have illustrated a type or form of the car merely for the purpose of showing my improved safety attachment applied thereto. This cage or car has its base 1 constructed in a manner to provide guides for the slidable dogs 3, and, as shown, the base of the car is constructed with a continuous transverse sill shaped to embrace the rack-bars 11 and to sustain the platform 2 of the cage. I would have it understood, however, that I do not limit myself to the form of the cage or car as herein shown, because the base may be constructed in a different manner to provide the guides for the slidable dogs 3. The lower side of the car-base is closed by a covering-board 4, which serves to house within the base the slidable dogs 3.

As is usual in the construction of cages or cars for hatchway-elevators, a cross-beam 9 is provided at the upper end of the cage, and said cross-beam is forked at its ends, as at 10, to embrace the fixed racks 11, which are fastened to the vertical guides for the cage. In this cross-beam 9, the floor 2 of the cage, and the sill 1 thereof are formed vertical openings, which are in line with each other, to provide for the passage therethrough of an operating-rod 5. This rod is provided at its upper end with a clevis, to which is attached the hoisting-cable 6, and at its lower end the rod has a head 7, adapted to rest against the covering 4 of the car. The rod is capable of a vertical sliding movement through the cage; but the head 7 limits the vertical movement of the rod with relation to the cage.

The slidable dogs 3 are arranged to be extended from opposite sides of the car into engagement with the racks 11, and said dogs 3 are operatively connected with the slidable rod 5 by suitable positive connections designed to impel the dogs outwardly in a positive manner to cause them to engage with the

fixed racks 11 with precision and certainty in the event of injury to the cable 6. As shown by the drawings, the connections between the slidable dogs and the vertical rod 5 consist of 5 links 8, the inner ends of which are attached pivotally to the rod 5, while the outer ends thereof are connected pivotally to the heels of the slidable dogs 3, whereby a downward movement of the rod 5 depresses the links 8 10 substantially into alinement with each other and forces outward the dogs 3 in a manner to have the noses of the dogs engage with the teeth of the facing-racks 11.

As shown by the drawings, the vertically-movable rod 5 is provided with a collar 13, 15 which may be integral with said rod or be rigidly fastened thereto in a suitable way, and between this collar and the cross-beam 9 of the cage is arranged a suspension-spring 12. 20 This spring is seated at one end against the collar on the rod and at its other end against the cross-beam 9 of the cage; but it is evident that the detailed construction and arrangement of these parts may be varied by a skilled 25 mechanic.

The tension of the suspension-spring 12 is such that it sustains, in connection with the rod 5, the greater portion of the weight of the cage and its load, so that the cage and the rod 30 5 are sustained in a manner to permit a limited movement of the cage with relation to the rod.

Under normal conditions the vertically-movable rod and the spring are so positioned 35 with relation to the cage that the links will draw on the slidable dogs to retract the same within the cage and free them from the teeth of the fixed racks on the elevator-guides; but the parts are arranged in such a manner that 40 when the cable breaks the dogs 3 are made to only slightly engage the recess, and the weight of the cage bearing on the links 8 serves to throw the dogs into complete engagement with the racks. The spring is compressed

sufficiently for it to throw the dogs into slight 45 engagement with the racks.

An elevator cage or car provided with my improved attachment serves efficiently to prevent accidents which have heretofore happened in connection with mining-cages and 50 elevator-cars which are not provided with safety appliances. By the arrangement and construction of parts shown and described the operation of the slidable dogs is positive and automatic. 55

It is of course obvious that the style of the cage is immaterial, because my improved safety appliance may be used in connection with the cages of passenger-elevators, or in 60 connection with freight-elevators used in the hatchways of warehouses, or, in fact, with cages or cars of any elevators which it is desired to equip with automatic safety appliances.

Having thus described the invention, what 65 is claimed as new, and desired to be secured by Letters Patent, is—

The combination with elevator-racks, and a cage or car, of a slidable rod having a head 70 at its lower end to limit its vertical movement with relation to the car, a spring acting against said rod, the dogs adapted for engagement with the racks, and the links attached to the rod and the dogs, the rod and 75 dogs arranged to be moved by the spring for the dogs to have slight engagement with the racks and the weight of the cage acting on said links to force the dogs into complete engagement with the racks, substantially as described. 80

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

DAVID W. KNIGHT.

Witnesses:

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