S. S. LOZAW.

SAFETY DEVICE FOR ELEVATORS.

APPLICATION FILED MAY 4, 1909.

953,537. Patented Mar. 29, 1910.

Fig. 1.

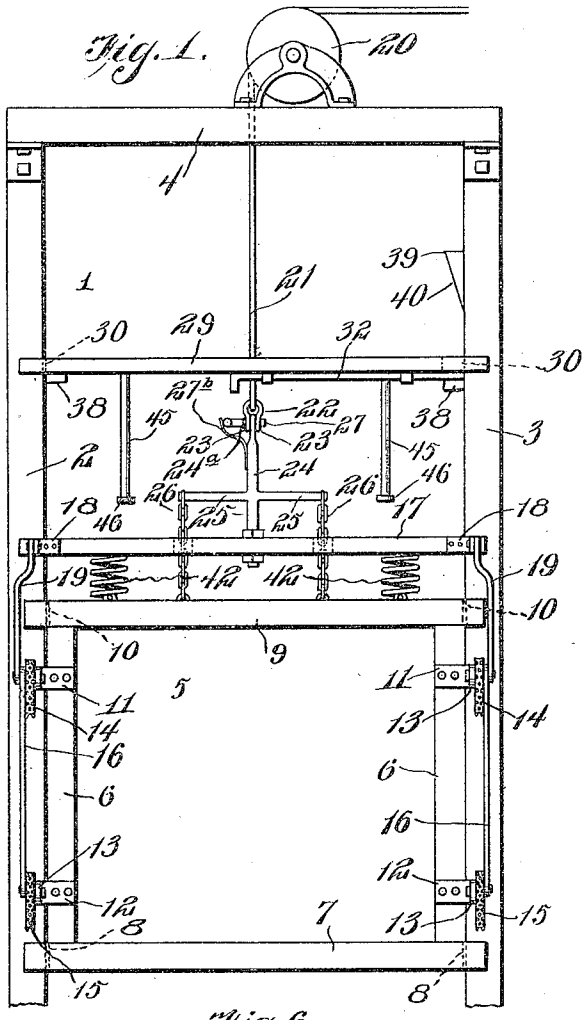


Fig. 2.

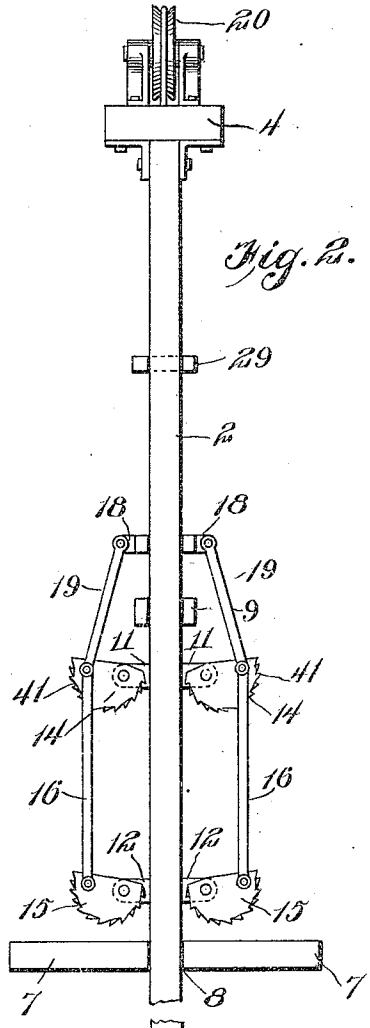


Fig. 6.

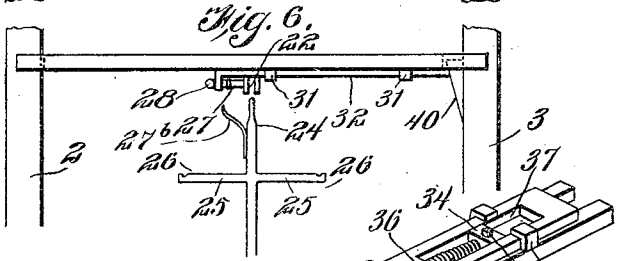


Fig. 4.

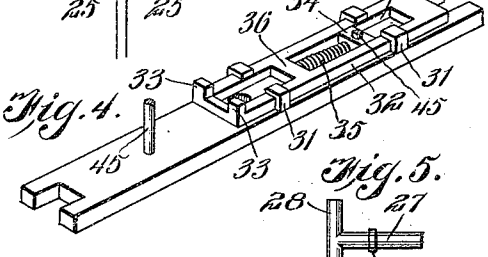


Fig. 5.

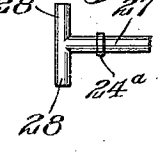
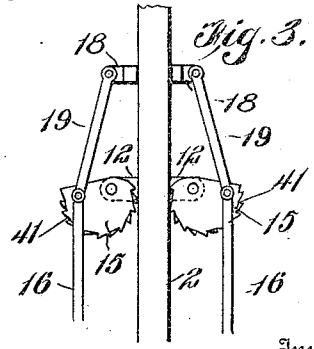


Fig. 3.



Witnesses

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SAFETY DEVICE FOR ELEVATORS.

953,537. Specification of Letters Patent. Patented Mar. 29, 1910.

Application filed May 4, 1909. Serial No. 493,768.

To all whom it may concern:

Be it known that I, SULDAN S. LOZAW, a citizen of the United States, residing at Larksville, in the county of Luzerne and State of Pennsylvania, have invented new and useful Improvements in Safety Devices for Elevators, of which the following is a specification.

This invention relates to safety devices for elevators, and has for an object to provide novel means for connecting the hoisting cable with the car and to provide effective means for coöperating with the said first means to release it from the car to prevent upward movement of the latter past a predetermined point.

Other objects and advantages will be apparent as the nature of the invention is better set forth, and it will be understood that changes within the scope of the claim may be resorted to without departing from the spirit of the invention.

In the drawing, forming a portion of this specification and in which like numerals of reference indicate similar parts in the several views:—Figure 1 is a view in side elevation of a car or cage illustrating the improved safety device as applied. Fig. 2 is an end view. Fig. 3 is a view similar to Fig. 2 showing the cams or eccentrics in their operative positions. Fig. 4 is a perspective view of the movable element and the cable releasing means carried thereby to be actuated when the car has reached a point adjacent to the top of the shaft. Fig. 5 is a plan view of the retaining element for fastening the hoisting cable to an element of the car or cage. Fig. 6 is a view in side elevation of the vertically movable element showing the manner of actuating the cable releasing means.

Referring now more particularly to the drawing, there is shown an elevator shaft 1 provided with oppositely disposed parallel spaced guide beams 2 and 3 connected at their upper ends by a cross bar or beam 4.

A cage or car is diagrammatically shown at 5 and carries vertical standards 6 connected by a bottom or floor 7 at their lower ends provided at its ends with guide slots 8 for receiving the beams 2 and 3 of the shaft. The standards 6 are connected at their upper ends by a member 9 which is also provided at its ends with guide slots 10 for receiving the beams 2 and 3. Each standard 6 is provided adjacent to its upper end with oppositely extending ears or brackets 11, and the said standards are each provided adjacent to their lower ends with similar ears or brackets 12. The brackets 11 and 12 are extended outwardly at the sides of the beams 2 and 3 of the shaft and carry horizontally disposed right angularly extending portions 13. The portions 13 of the brackets 11 have pivotally mounted thereto cams or eccentrics 14, and the portions 13 of the brackets 12 have pivotally mounted thereto cams or eccentrics 15 identical in construction to the cams or eccentrics 14. The cams 14 and 15 are connected to each other by links 16 pivoted at their ends to said cams or eccentrics so that upon movement of one cam or eccentric the other one to which it is connected will be correspondingly moved.

A gravity falling weight 17 is located above the member 9 of the cage or car and said weight is slidably engaged at its ends with the beams 2 and 3 and carries at each end a pair of brackets 18 to which are pivotally connected the upper ends of elements 19, the lower ends of said elements being pivotally connected to the cams or eccentrics 14. The beam 4 carries a pulley 20 over which is passed the hoisting cable 21 having a clevis 22 at its end within the shaft, said clevis being provided with spaced depending ears 23 for receiving an element 24 carried by the weight 17. The element 24 is provided with a plurality of arms 25 and to these arms, the upper ends of chains 26 are connected, the lower ends of said chains being secured to the beam 9. To securely hold the element 24 engaged with the clevis 22, I provide a spring pressed retaining element of T-form having a horizontally disposed pin portion 27 which is passed through the ears 23 and through the shank of the element 24 as clearly shown in Fig. 1 of the drawing, and as clearly illustrated the said pin portion is provided with oppositely directed arms or the like 28. When the pin portion 27 of the element just referred to is in its operative position so as to be permanently engaged with the clevis and with the

element 24, the arms 28 are disposed in spaced relation with respect to the clevis for a purpose to be hereinafter more fully explained.

A sliding element 29 is located adjacent to the top of the shaft and in the path of movement of the car or cage 5 and the said element 29 is forked at its ends as indicated at 30 to receive the beams 2 and 3 of the shaft 1. The element 29 has depending therefrom pairs of parallel spaced guide elements 31 which receive a sliding dog 32 provided at its inner end with depending spaced lugs 33 located normally in such position that they can straddle a portion of the pin 27 forming a part of the retaining element previously referred to. In order that the outer portion of the sliding dog 32 can be yieldingly engaged with the inner face of the beam 3 adjacent to the upper end of the latter, I provide the element 29 with a depending lug 34 to which is fixed one end of a retractile spring 35, the other end of said spring being connected to a portion 36 of the dog 32. It may be mentioned that the dog is provided with a longitudinally extending guide slot 37 between the walls of which is disposed the lug 34. To prevent downward movement of the element 29 below a predetermined point, I provide the beams 2 and 3 adjacent to their upper ends with inwardly directed stops 38 adapted to support the said element as will be readily grasped. The beam 3 is provided with a cam 39 having a beveled inner face 40 located in the path of movement of the dog 32.

The cams or eccentrics 14 and 15 are provided with arcuate series of spur teeth 41, which, through the provision of the elements 19 and the weight 17 which latter is normally suspended from the cable 21 are disposed in such position with respect to the beams 2 and 3 that they do not ordinarily or normally engage said beams. Should the cable 21 break, it is obvious that the weight 17 will fall and carry therewith the elements 19 which are pivotally connected to the cams or eccentrics 14 so as to move the latter in order that their teeth may become effectively engaged with the beams 2 and 3 of the shaft. By providing the links 16, it is obvious that simultaneously with the cams or eccentrics 14, the cams 15 are also actuated to effectively engage their teeth with the beams 2 and 3. Retractile springs 42 connect the weight with the member 9 of the car so that when the latter is released from the cable the weight will be drawn downwardly toward the said member 9 to actuate the shaft-engaging eccentrics or cams.

In combination with the foregoing elements which form in their entirety novel means for preventing a car or cage falling in its shaft, I also prevent the car or cage from moving upwardly beyond a predetermined point by the provision of the element 29, and the dog 32. It will be readily understood that as soon as the car or cage 5 is moved upwardly to the extent that the clevis 22 engages the under side of the element 29, it will carry the latter upwardly in order that the outer edge of the dog 32 will ride the inclined face 40 of the cam 39 and will be moved toward the beam 2 of the shaft. When the clevis 22 has reached the point just mentioned, it may be mentioned that the depending lugs 33 of the dog 32 are disposed at the sides of the pin 27 and directly behind the arms 28 upon the pin so that simultaneously upon operation of the dog 32, the retaining element will be forced or moved toward the beam 2 to desengage the pin portion from the clevis and from the element 24.

It is thought that the foregoing description sets forth a safety device for elevators that will be extremely simple in construction, effective in operation, and its use readily affords protection to those riding in the cage or car of a mine shaft particularly, but I do not desire to limit myself exclusively to such as my invention may be applied to any traveling body for the transportation of passengers and may be used in connection with various well known elevators commonly used.

The element 29 is provided with depending arms 45 provided at their lower ends with buffer heads 46 disposed directly above the weight 17 to be engaged thereby in the upward movement of the cage 5 so that the element 29 can be accurately moved in a vertical plane to prevent its binding at either of its ends as will be readily understood.

It may be mentioned that the pin portion 27 of the retaining element is provided with a shoulder 24^a, and the said pin portion is yieldingly engaged by a spring 27^b carried by the element 24. It may also be mentioned that the teeth 41 are alternately bent in opposite directions or arranged in staggered relation to effect a perfect engagement of the teeth with the beams 2 and 3 of the shaft.

I claim:—

An elevator comprising a car having a cable-engaged member and means for detachably engaging the cable with the member, a vertically sliding element located above the car and disposed in the path of movement thereof, a sliding dog carried by the said vertically sliding element, said dog being adapted for engagement with the cable-engaging means to move the latter to its disengaged position to permit separation of the car from the cable, means carried by

the vertically sliding element to be engaged by the car to move the element, means for holding the said sliding element against sliding movement in a downward direction past a predetermined point, and means adapted in upward sliding movement of the element to impart sliding movement to the dog.

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

SULDAN S. LOZAW.

Witnesses:
WILLIAM DAVIS,
JAMES CLINTON.