

No. 819,052.

PATENTED MAY 1, 1906.

W. H. FERN.
SAFETY DEVICE FOR ELEVATORS.
APPLICATION FILED JUNE 12, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

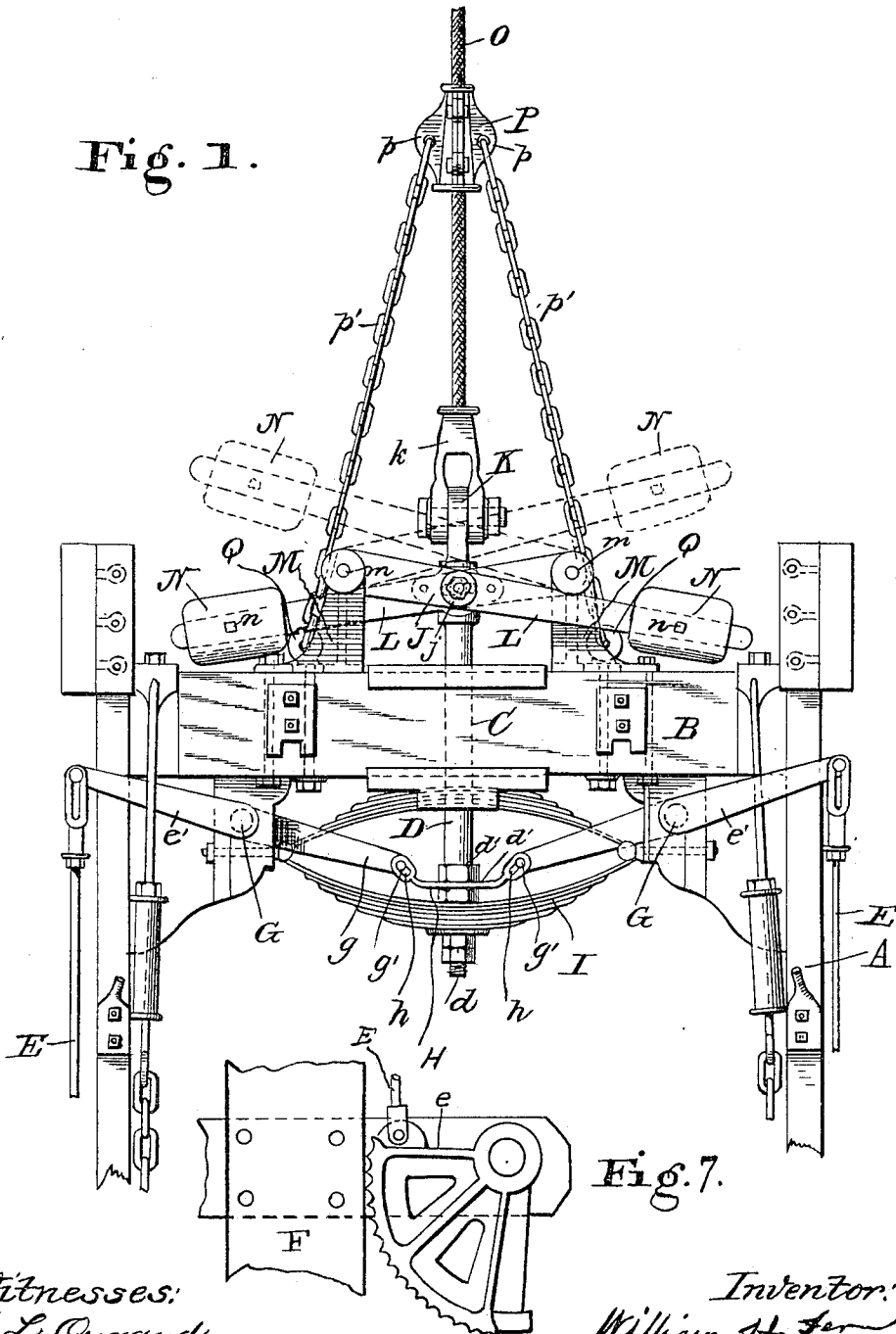


Fig. 7.

Witnesses:
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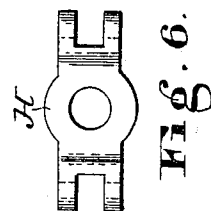
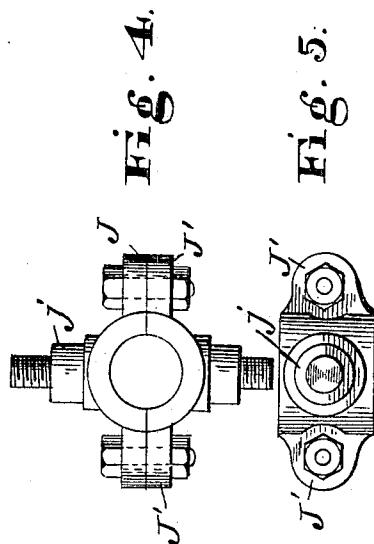
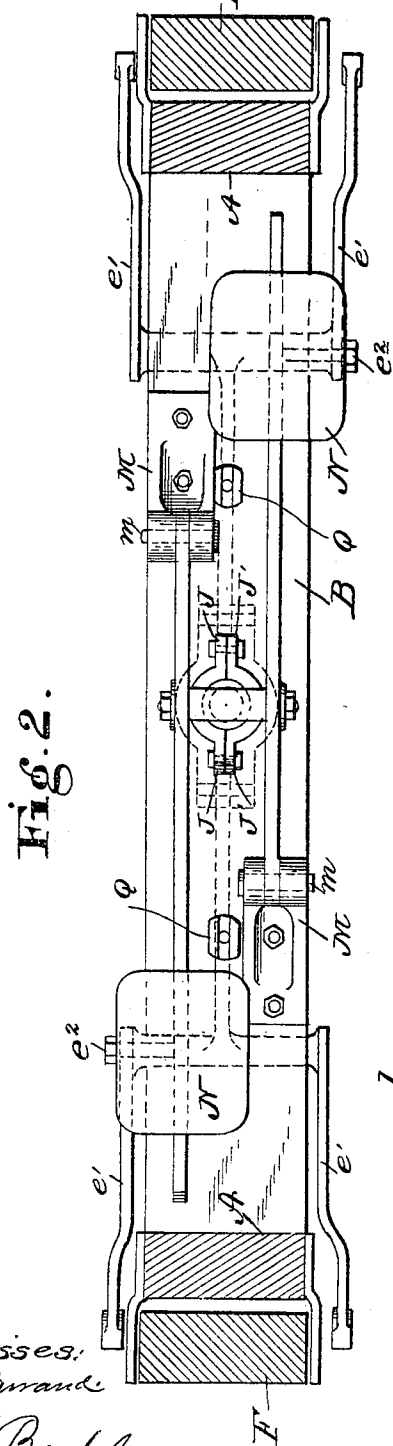
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SAFETY DEVICE FOR ELEVATORS.

APPLICATION FILED JUNE 12, 1905.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

WILLIAM H. FERN, OF SCRANTON, PENNSYLVANIA.

SAFETY DEVICE FOR ELEVATORS.

No. 819,052.

Specification of Letters Patent.

Patented May 1, 1906.

Application filed June 12, 1905. Serial No. 264,935.

To all whom it may concern:

Be it known that I, WILLIAM H. FERN, a citizen of the United States of America, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Safety Devices for Elevators, of which the following is a specification.

This invention relates to elevators, and particularly to a safety device to arrest a car in case the supporting-cable is severed.

An object of this invention is to provide novel means for positively actuating the arresting mechanism, the said means comprising a series of weights so arranged as to be held normally in operative position through the action of the supporting-cable and released by any slack in the cable or any fracture of the said cable.

Furthermore, an object of the invention is to provide an auxiliary safety-actuating means connected with the weights heretofore mentioned, so that the said safety device will be positively operated to prevent the descent of the car except when under the control of the operator.

Furthermore, an object of this invention is to provide weights of the character noted which will be so positioned as to be arrested when they have reached the limit of their downward limit to actuate the safety mechanism, thus removing the strain from the pivots of the weighted arms after they have descended and performed the function for which they are intended.

With the foregoing and other objects in view the invention consists in the details of construction and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawings, forming part of this specification, wherein like characters denote corresponding parts in the several views, in which—

Figure 1 is a view in elevation, showing a fragment of an elevator-car, the lower part of the car being omitted. Fig. 2 is a plan view of the safety-operating device, the guides for the elevator-car being in section. Fig. 3 is a detail view of one of the operating-levers for the weight. Figs. 4 and 5 are side and plan views, respectively, of the head which carries the weighted arms. Fig. 6 is a plan view of a cross-arm for operating the le-

vers of the safety mechanism. Fig. 7 is a detail view of the clutch.

In the drawings, A denotes a portion of an elevator-car, and B the top beam thereof. The beam is provided with an approximately central aperture C, through which a rod D is slidable, said rod having a threaded lower end, as shown at *d*.

The links E are of any ordinary construction and are designed for the purpose of operating dogs, clutches, or other mechanism for arresting the descent of the car; but as the particular form of dog or clutch is immaterial it will not be described in detail. Suffice it to say that the dogs are pivoted to be oscillated by the links E and that said dogs are caused to bind against the guides or uprights F, between which the car moves.

Shafts G are mounted in portion of the structure of the car, and each shaft has an arm *g*, which extends inwardly and is provided with a cross-pin or bolt *g'*, which cross-pin is movable in the slotted ends *h* of the cross-arm H. The cross-arm is secured centrally on the rod D and takes the motion of the said rod in its ascent or descent. The position of the cross-arm with relation to the end of the rod may be varied through the medium of the nuts *d'* *d'*, between which the cross-arm is bound. This feature provides for the adjustments of the cross-arms, and consequently the pitch of the arms *g g*, with relation to the rod D.

As a means for holding the rod D depressed I provide a spring I, which is attached to the under surface of the beam B, and as said spring is distended it carries the rod D through the beam; but when the weight of the elevator-car is on the rod the spring is compressed, and it is only when there is a slack in the cable or fracture of the cable that the spring acts to draw the rod, as indicated.

The links E on each side of the car are provided to actuate the dogs *e*, which dogs are thrown into engagement with the guides F. The links E are connected to the rock-shaft G through the medium of the arms *e'*, which arms are suitably connected to the rock-shaft in any manner desired; but in the drawings, Fig. 2, I have shown one of the arms as being integral with the rock-shaft and the other arm of each pair secured to the rock-arm through the medium of the bolt *e*².

From the foregoing description it will be understood that with the reciprocation of the

rod D the shafts are partially rotated and the arms e' are oscillated, thereby communicating motion to the links E, and consequently to the dogs e .

5 It has been found in practice that a safety device made in accordance with the foregoing description (especially where a spring I is utilized in underground work where there is a dampness and gases) the metal of the
10 spring becomes impaired and the device fails in operation to the extent of permitting the car to fall in case the cable is severed. I therefore produce an auxiliary means for operating the safety mechanism, and to that
15 end I provide on the upper end of the rod D a head or coupling comprising two sections J and J', suitably bolted together, each section having a trunnion j and an extension K, to which the cable is connected through the
20 medium of the yoke k .

As will be observed by reference to Figs. 1, 4, and 5, the head being on the upper end of the rod D any movement of the head is communicated to the rod. The levers L are
25 mounted on the trunnions j , the said levers having slots l to permit a certain amount of play between the levers and trunnions. Brackets M have their bases secured to the beam B and have bifurcated upper ends, in
30 which bifurcation the end of a lever L is pivoted through the medium of the pivot m , it being understood that there are apertures in the upper ends of the brackets to receive the pivots, as heretofore indicated. Weights N
35 are slidable on the levers L and are provided with set-screws n , adapted to bind against the levers to hold the weights in adjusted position. It is desirable that the weights should be adjustable in order that they may
40 be moved toward or away from the fulcrum of the levers to vary the action of the weights according to the requirement. The cable O has a clamp P thereon, which is adjusted to any desired position, and the clamp is provided

with apertured ears p to receive the ends of 45 the chains p' , which chains have their lower ends secured to eyes Q, attached to the beam of the elevator. It will be assumed for the purpose of producing an operative device that the clamp P has not been attached to 50 the cable O, as shown in Fig. 1, but that the said clamp would be secured after the weights and levers assume the dotted-line position, at which time the chains would be in proper relation to the other parts of the mechanism. 55

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a safety device for elevators, a car having a cross-beam, a rod slidable through 60 the cross-beam, brackets on the cross-beam arranged to each side of the slidable rod, levers pivoted at one end to the brackets and intermediate their length to the rod, slidable weights adjustably mounted on the free portions 65 of the levers, stop mechanism carried by the car, and means for connecting the slidable rod to the stop mechanism.

2. In a safety device for elevators, a car having a cross-beam, a rod slidable through 70 the cross-beam, brackets on the cross-beam arranged to each side of the slidable rod, a head formed in sections on the slidable rod, oppositely-arranged trunnions on the head, levers pivoted at one end to the brackets and 75 engaging the trunnions of the head intermediate their length, weights mounted on the free portions of the levers and adjustable longitudinally thereof, stop mechanism carried by the car, and means connecting the 80 slidable rod to said stop mechanism.

In testimony whereof I affix my signature, in the presence of two witnesses, this 10th day of June, 1905.

WILLIAM H. FERN

Witnesses:

S. D. ROBERTS,
A. W. REUHLING.