

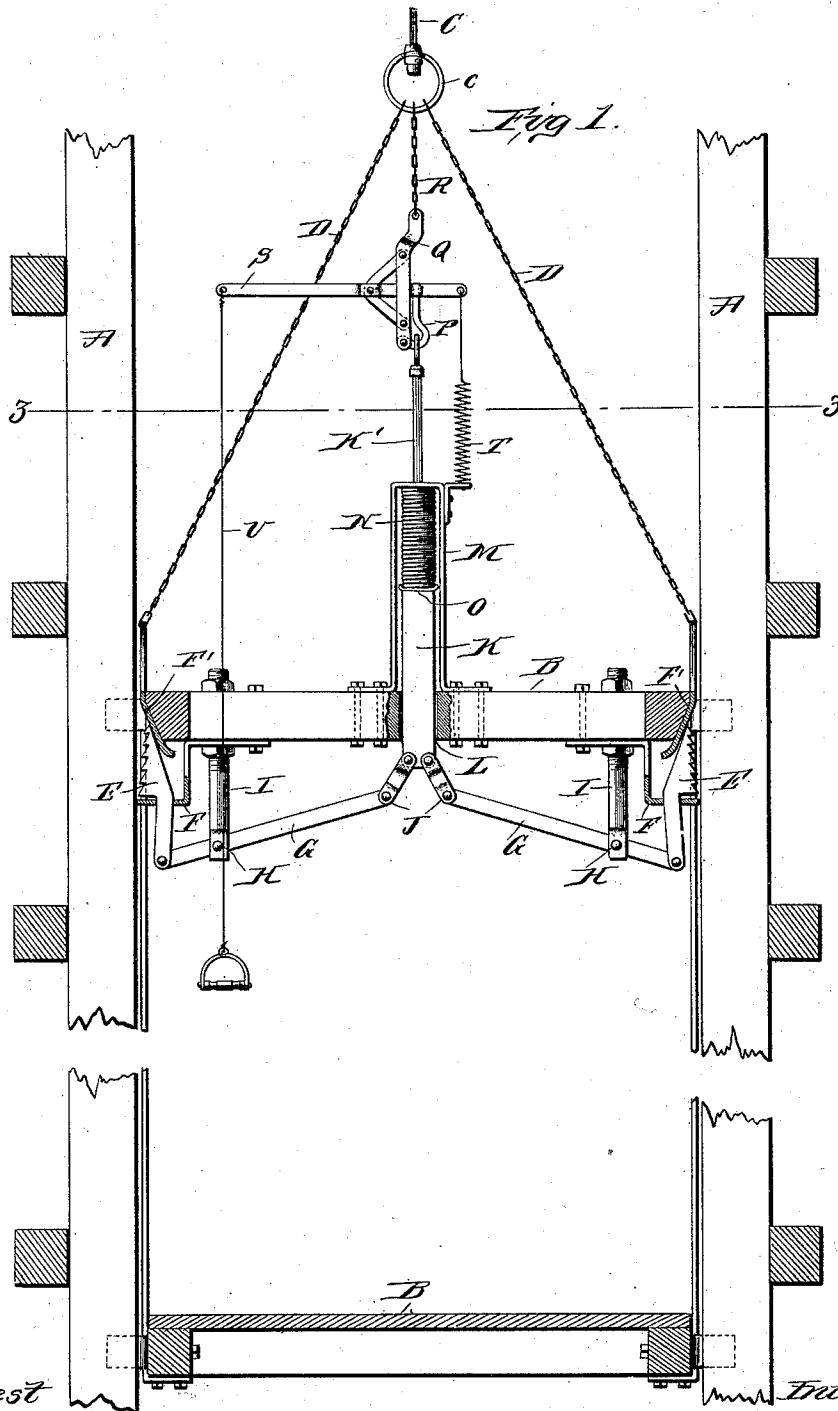
(No Model.)

3 Sheets—Sheet 1.

W. A. FINNEY.
SAFETY CATCH FOR ELEVATORS.

No. 505,289.

Patented Sept. 19, 1893.



Attest

A. L. Sweet
W. A. Parker.

Inventor:

Walter A. Finner

BY Chas. J. Allen

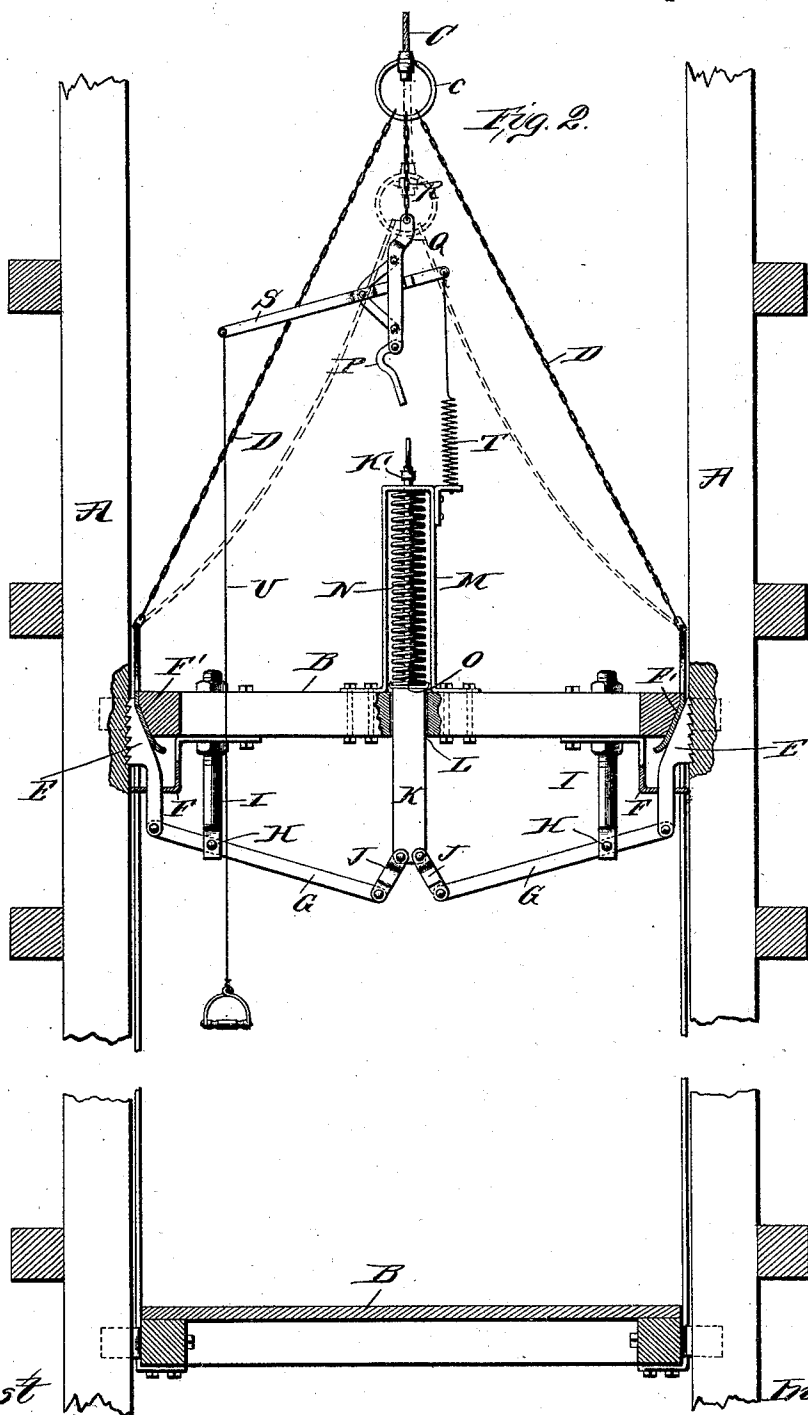
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3 Sheets—Sheet 2.

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3 Sheets—Sheet 3.

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Fig. 3.

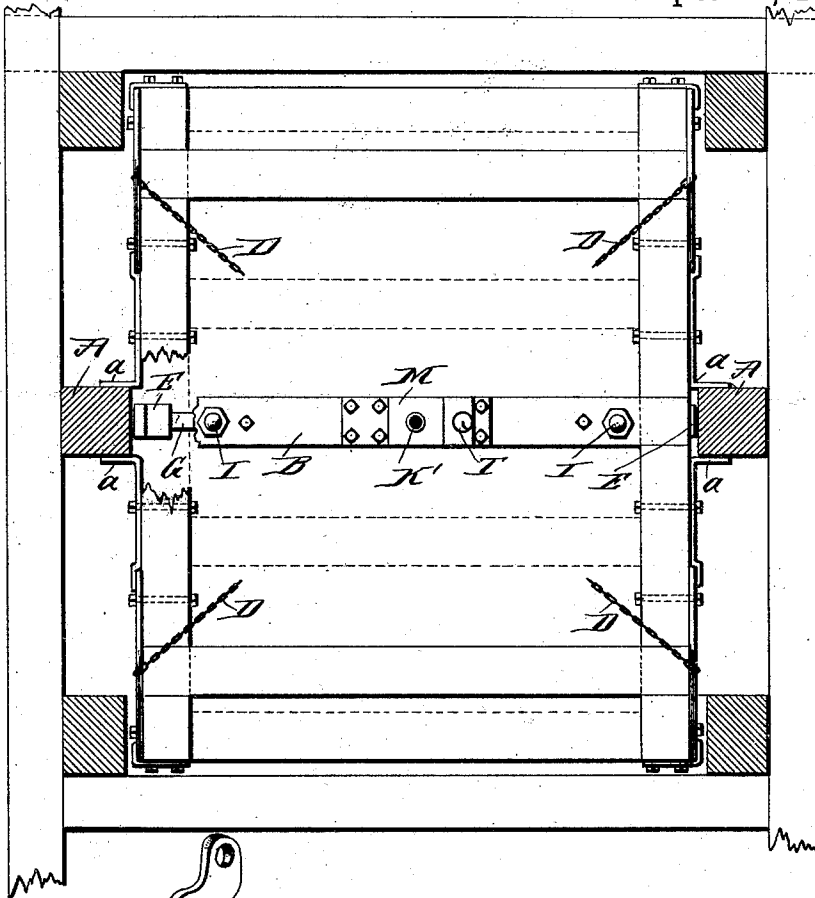


Fig. 4.

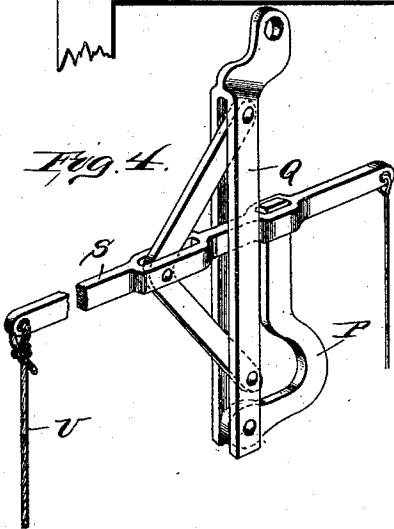
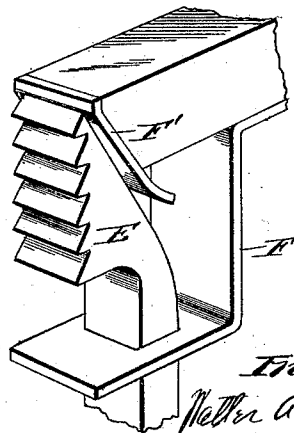


Fig. 5.



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UNITED STATES PATENT OFFICE.

WALTER A. FINNEY, OF HILLSBOROUGH, ILLINOIS.

SAFETY-CATCH FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 505,289, dated September 19, 1893.

Application filed April 25, 1893. Serial No. 471,786. (No model.)

To all whom it may concern:

Be it known that I, WALTER A. FINNEY, a citizen of the United States, residing at Hillsborough, in the county of Montgomery, in the State of Illinois, have invented a new and useful Improvement in Safety-Catches for Elevators, of which the following is a specification.

This invention relates to certain new and useful improvements in safety catches for elevators.

The object of my improvements is to secure absolute safety by automatic wedge catches in case of accident to the supporting mechanism of the elevator, and to set such catches by hand when desired, and the peculiarities of my device will be hereinafter fully described in the specification, illustrated in the drawings, and pointed out in the claims.

In the accompanying drawings on which like reference letters indicate corresponding parts, Figure 1 represents a vertical sectional view of a portion of an elevator shaft, showing the elevator cage also in section and the parts in their normal position for travel; Fig. 2, a similar view showing the safety catches in their clutched position to support the cage; Fig. 3, a cross section of the shaft on the line 3-3, Fig. 1, showing the cage in plan view; Fig. 4, a detailed perspective view of the tripping device for the cage; and Fig. 5, a detailed perspective view of one catch or wedge, its guide and backing or friction plate.

The letters A A designate the guides of the elevator shaft, between which is mounted the elevator cage B, supported from the cable C by the spreading chains D to the four corners of the cage, or otherwise. Angle irons a, Fig. 3, steady the cage by embracing the guides A.

Any suitable form of cage may be used, as my device is adapted for either freight or passenger elevators.

At each side of the cage, opposite, or in proximity to the guides, are catches E consisting of tapering wedge-shaped heads, provided with sharp downwardly acting teeth on their outer faces, and shank portions of square or angular cross section, mounted in guides F secured to the cage, and each provided with a matching hole or slot for the shank of the respective catch. The catch is thus prevented from turning in the guide. The lower end of each shank is engaged to a lever G,

which is fulcrumed on a pivot H carried by a rod or stand I, extending downward from the cage, as seen in Figs. 1 and 2. The inner ends of the levers are connected by links J, or otherwise, with a plunger consisting of a plate portion K extending through a slot L in the cage, and provided with a reduced or stem portion K' adapted to slide in a chair or saddle M, mounted on the top of the cage, as seen in the figures. A coil spring N surrounds said stem portion of the plunger and bears against the top of the chair at one end, and against a spring seat O on the plunger, at the bottom of the spring, thereby tending to force the plunger downward. The top of the stem has an eye or clevis which is normally engaged with an L-hook P, pivoted in a double link Q, which is supported by a chain R from a common clevis c, to which the spreading chains D are attached. The upper end of the hook P is normally held by a trip arm S, pivoted to an extension of the link Q, and having a slot or opening to engage with said hook, as shown in Fig. 4. The trip arm is prevented from accidental disengagement with the hook, by means of a spring T, connecting one end of the arm with the chair, or other portion of the cage. The opposite end of the arm is provided with a cord U, whereby the arm may be raised from its engagement with the L-hook by operation of the hand, when so desired.

Fig. 1 shows the spring N compressed and the hook in engagement with the trip arm, and thus supporting the plunger in its raised position to maintain such compression. Fig. 2 shows the hook disengaged from the trip arm and the plunger in its lower position, being forced downward by the action of the spring, which thus operates the levers G to throw the wedge catches E upward into engagement with the guides. This action of the catches may be caused by operating the trip arm S by hand; or by the slacking up of the supporting cable C by its breaking. As long as the clevis ring c maintains the spreading chains D taut, the chain R also supports the trip mechanism in its taut supporting position for the plunger. Any breaking of the supporting mechanism, or other cause whereby the trip arm would be slacked and disengaged from the hook, or other cause by reason of which the plunger K' would be forced down-

ward by the spring N, would cause the catches to be instantly thrown upward and outward into forcible and sure engagement with the guides A.

5 The dotted lines, Fig. 2, show the position of ring and side guys in the act of falling after the breaking of the supporting mechanism.

The back of the catches preferably slide on friction plates F', which assist the slot guides 10 F in throwing the catches outward. It will be seen from Fig. 1 that the catches are thrown backward at their upper ends by the action of the levers when the plunger is raised, and the friction plates are preferably let into the cage timbers to provide a recess, as shown. 15 Thus it will be seen that the cage may be instantly arrested in its downward descent in case of accident, and that such stoppage will be effected automatically,—or by hand, when 20 so desired.

I do not confine myself to the exact construction herein shown and described.

Having thus fully described my invention, what I claim as new, and desire to secure by 25 Letters Patent, is—

1. The combination with guides in an elevator shaft, and a cage slidably mounted between the same, of wedge-shaped catches provided with sharp downwardly acting teeth on 30 their outer faces opposite said guides, levers each of which is engaged at one end with one of the catches, a spring-actuated plunger adapted to act on the other ends of said levers, a spring for said plunger to effect such 35 action, and means to maintain such spring normally compressed and the catches out of action, substantially as and for the purpose described.

2. The combination with the guides in an 40 elevator shaft and a cage mounted between the same, of catches carried by said cage opposite the guides respectively, and adapted to slide upward and outward to wedge between said guides and cage, levers fulcrumed 45 on the cage each of which is connected at one end to one of said catches, a plunger engaging the other ends of the levers, a trip mechanism to maintain the plunger in its upper position and the catches inoperative, and a 50 spring normally compressed, and acting to throw the plunger downward and the catches into action, when the trip mechanism is actuated, substantially as described.

3. The combination with guides, an elevator cage and a safety catch therefor, of a trip 55 mechanism consisting of a link maintained normally in a suspended position, a pivot hook at one end of the link adapted to engage with the safety catch device, and a trip 60 arm to secure the other end of the hook till the arm is operated to allow the catch to act.

4. The combination with an elevator shaft, a cage therein, and a safety catch therefor, of a trip mechanism to support said safety catch 65 normally inactive, and consisting of an L-shaped hook normally engaging the said safety device, a link to which said hook is pivoted

by one end, a trip arm carried by the link and provided with a slot or recess to engage 70 the other end of the hook, a spring to prevent the premature disengagement of the arm and hook, and means to effect said disengagement, substantially as and for the purpose described.

5. In a safety catch, a sliding wedge provided with ratchet teeth on one face, and a 75 shank polygonal in cross section, a slotted guide for said shank, a friction plate for the back of said wedge, and means to operate said wedge along said plate. 80

6. In a safety catch for elevators, the combination with the cage and guides, of a pair of sliding wedge-shaped catches provided with 85 teeth on their outer faces, friction plates for their rear faces, levers fulcrumed in the cage, and connected at their outer ends with said catches, a plunger having a flattened lower 90 end engaged with the inner ends of the levers, and a reduced upper stem portion, a saddle or chair secured to the cage and forming a guide for the plunger, a coil spring mounted on the plunger-stem within the chair and acting 95 downward, and trip means to maintain the plunger elevated and the spring compressed until said trip is actuated.

7. In a safety catch, the herein described trip mechanism, consisting of a suspended 100 link or piece, adapted to be supported at the upper end, a pivot hook at the other end, a trip arm pivoted to a side extension from said link and having a slot or recess to engage 105 with said hook, and a spring tending to maintain such engagement, and adjunctive devices inoperatively supported on said pivot hook when engaged with said trip arm, but 110 free when said arm is disengaged from the hook.

8. In a safety catch for elevators, the combination with elevator shaft guides and the 115 cage mounted therein, of a catch guide carried by the cage and provided with a polygonal slot; a wedge catch having a shank polygonal in cross-section slidably mounted in said slot, a friction plate at the back of said wedge 120 catch, and means to slide said catch, substantially as shown and described. 125

9. The combination with guides and an elevator cage having a plurality of spreading chains and a supporting cable, of a trip mechanism also supported from said cable, a 130 spring-actuated safety catch for said cage connected to said trip mechanism, and maintained inactive while the spreading chains and trip mechanism are maintained in a taut condition, but adapted to be thrown into action 135 when the trip mechanism is slacked by the slacking of the spreading chains.

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

WALTER A. FINNEY.

Witnesses:

R. R. SWEET,
MILLIE SPYER.