

(No Model.)

C. C. PALMER.

SAFETY DEVICE FOR ELEVATORS.

No. 261,101.

Patented July 11, 1882.

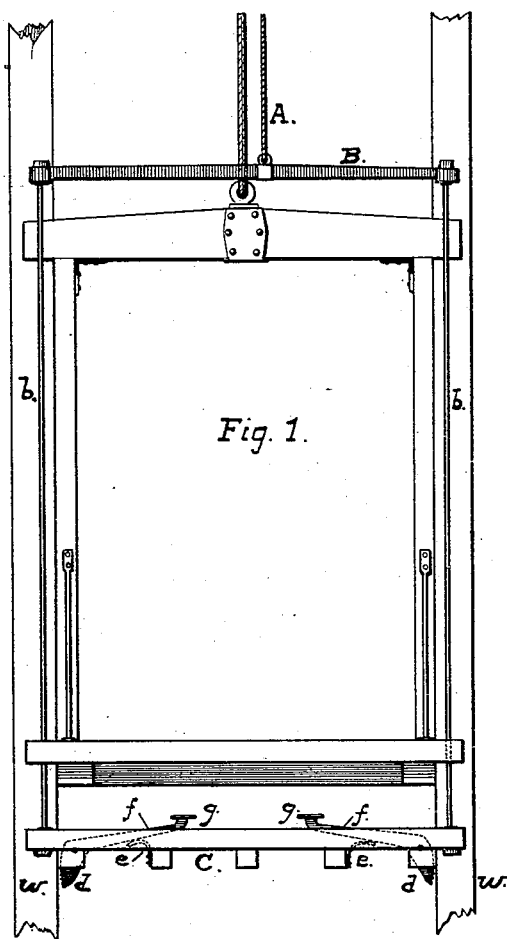


Fig. 1.

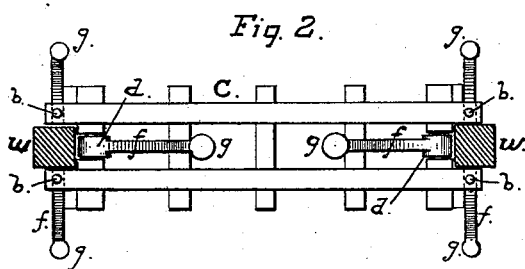


Fig. 2.

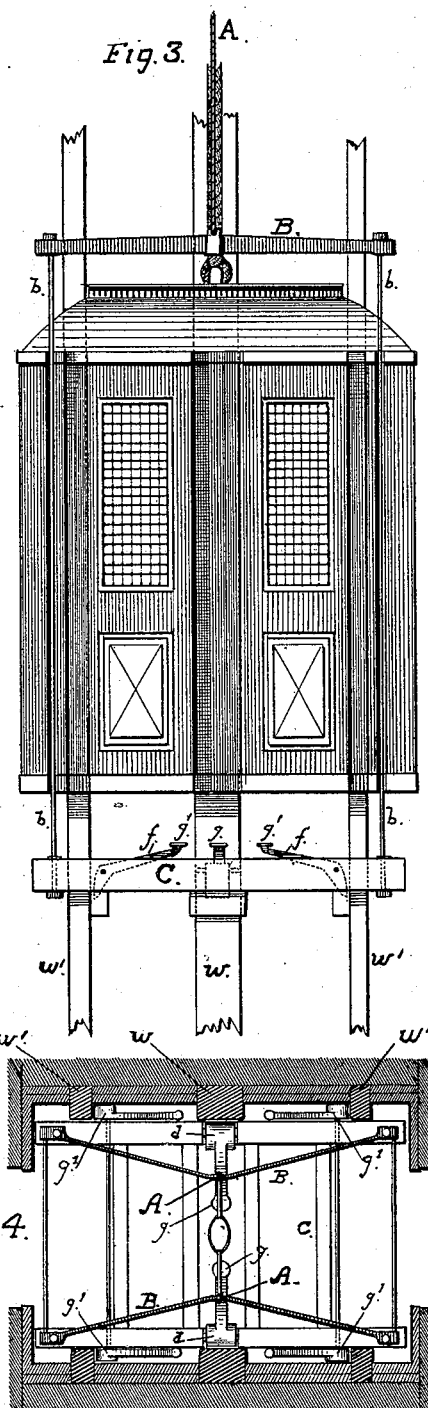


Fig. 3.

Fig. 4.

Witnesses:

*Wm. Foster*

*Wm. F. Clark*

Inventor:

*Cassius C. Palmer*  
By his atty *R. Boone & Osborn*

# UNITED STATES PATENT OFFICE.

CASSIUS C. PALMER, OF OAKLAND, CALIFORNIA.

## SAFETY DEVICE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 261,101, dated July 11, 1882.

Application filed August 10, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, CASSIUS C. PALMER, of Oakland, in the county of Alameda and State of California, have made and invented certain new and useful Improvements in Safety Stop Devices for Elevators; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings.

My invention relates to a safety device for arresting and holding the cage or platform of an elevator and preventing accidents when the hoisting-rope or the machinery breaks or gives way.

Of the devices now in use, one class or variety consists of dogs, clutches, or gripping devices operated by springs that are held out of action by the hoisting-rope or by catches of some kind controlled directly or indirectly by the hoisting-rope, and which can act to release the springs and throw the clutches against the guides or runs of the elevator only when the tension or pull of the rope is taken off the catches, while in another kind the gripping devices are acted upon by a mechanical device fixed on the elevator, that remains inactive so long as the regular speed of the elevator is maintained; but is thrown into action and caused to trip or otherwise operate the gripping device or clutches whenever the downward movement of the elevator is quickened beyond its usual rate of speed. Such devices, however, I have found to be defective in principle and uncertain in action. The increased speed or downward movement that is required of the elevator to bring the last-named device into action and operate the clutches produces sufficient momentum in a heavily-loaded cage to break the clutches when they are thrown out against the sides of the elevator well or shaft, while in the first-named construction the safety-clutches will be held out or will not act properly unless the hoisting-rope breaks in the vicinity of the cross head or upon that side of the sheave or pulley.

My invention provides a certain and effective holding device, simple in its construction, easily applied to any elevator now in use, and capable of instantaneous action when it is needed.

As hereinafter more particularly described,

and pointed out in the claims, my invention consists in placing beneath the cage or platform of an elevator a set of friction-dogs, clutches, or other suitable gripping device to engage with the sides, runs, or timbers on the sides of the elevator well or shaft, and in supporting and carrying the dogs or clutch device from and by an independent cross-head or frame, and a rope running at uniform speed with the hoisting-rope, but detached and disconnected therefrom, by which the clutches are carried along with the elevator in its up and down movements by the independent rope, and are caused to be operated or thrown into action by the sudden drop or downward movement of the elevator without the aid of springs, mechanical devices of any kind, or the services of an attendant.

In the accompanying drawings herein referred to, Figure 1 shows my invention as applied to a freight or platform elevator of the ordinary construction. Fig. 2 is a plan view of the safety device. Fig. 3 shows the application of my device to a cage or passenger-elevator of the heavier kind. Fig. 4 is a plan view of the safety device in Fig. 3.

To carry out my invention I provide a sheave or pulley upon the same shaft with the pulley of the principal hoisting-rope, and over this pulley I carry a rope, A, independently of, but so as to travel at the same speed with, the hoisting-rope. This rope A, I employ to support and carry a light cross-head, B, which is moved up and down uniformly at the same speed as the elevator cage or platform. Beneath the elevator floor or platform I arrange a set or sets of friction dogs or clutches of suitable construction to engage with, bite, or grip the guides, runs, or timbers on the sides of the elevator shaft or well, and I suspend and support these clutches from and by the cross-head B above by means of rods or ropes *b b*. These clutches are so applied that the weight or pressure of the cage or platform is caused to act directly upon them and throw them out against the sides of the elevator-shaft whenever the downward movement of the elevator exceeds the movement of the traveling cross-head B.

A simple and efficient mode of constructing and applying the clutches to be acted upon by the downward drop of the elevator is shown

in Figs. 1 and 2 of the drawings, where I fix in a strong and substantial frame, C, a set of pivoted clutches, *d d*, at each side to engage with the runs or guides *w w* of the elevator and support and carry this frame by the cross-head B and the rods *b b*, so that it shall move easily up and down at uniform speed with the elevator. I have this frame C to move always at a distance below the floor or platform of the elevator, so that while they both travel together there shall be a space between the under side of the elevator and the top surface of the frame C, and this space must be sufficient to keep the bottom of the cage or platform out of contact with the clutching mechanism, or the weight of the elevator off the arms or levers that throw out the clutches while the elevator is working properly. At each side of this frame C, I fix the clutches *d d*, so that they shall act, when thrown out to bite or grip the ways *w*, either on the face of the way, as shown in Fig. 1, or against both the face and sides, as shown in Fig. 4; and I construct the clutch with a gripping portion, *d*, serrated or roughened, if required, to run next to the surface of the way *w*, and a lever arm or bar, *f*, the end *g* of which projects and is held up above the top surface of the frame C, either by the weight of the heavier portion *d* or by the aid of a spring, *e*. Now, by this construction the clutches *d d* will be supported and kept out of action beneath the cage or platform by the cross-head and rope A as long as the elevator and the cross-head run together up and down at the regular speed; but when the weight of the elevator is thrown down or brought to bear on the clutches they will be thrown out mechanically and instantaneously, and will act to stop the elevator and hold it at any point. Thus the clutches are operated by the drop or pressure of the elevator without the aid of springs and without depending on the service or attention of an operator to work them.

In elevators of the heavier kind the clutch-carrying frame can be made correspondingly stronger, and additional clutches *g' g'* can be used, as in Figs. 3 and 4 of the drawings, to engage with posts, guides, or timber *w' w'*, provided at each side of the principal guides *w*. In this case the cross-head or frame B *b b*, that travels with the elevator, can be supported and carried by two independent ropes, A A.

It will be evident to any one familiar with the construction and use of elevators that the weight of the cross-head B and connected parts must be counterpoised by using weights at the other end of the rope A, or by running the rope over a winding-drum after the manner of working the hoisting-rope, so that the ropes shall travel at uniform speed, and the weight of the clutching device shall be properly supported beneath the elevator floor or

platform. This construction and arrangement, however, can be changed and varied as may be required or considered necessary without departing from the nature and principle of my invention, as the essential feature thereof consists in the use of the independent traveling rope and cross-head supporting a clutch device beneath the floor or platform of an elevator in position to be acted upon by the drop of the elevator.

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

1. In an elevator or hoisting works, the independent traveling rope and cross-head, in combination with a clutch device beneath the floor or platform of an elevator, said clutch device being adapted to be thrown into action by the drop or pressure of the elevator when falling, but to be held out of action or inoperative as long as the rope, cross-head, and elevator travel uniformly together, substantially as herein described.

2. The safety-frame C, having clutches for engaging with the guides *w* of an elevator-shaft, in combination with said guides, and with a rope, A, whereby the frame is suspended and moved independently of but uniformly with and beneath the cage or platform of an elevator, substantially as herein described.

3. The combination, with the cage or platform of an elevator, of a safety clutch device supported and carried beneath the elevator floor or platform from and by an independent traveling rope, and adapted to move up and down uniformly with the elevator, substantially as described.

4. A frame, C, suspended beneath and caused to travel at uniform speed with an elevator cage or platform, and having a clutch or stop mechanism consisting of the pivoted levers *f* and heads *g'*, projecting above the upper surface of the frame C, which is adapted to be operated by the drop or fall of the elevator down upon the said frame, substantially as herein described.

5. The combination, with the cage or platform of an elevator, of an independently-supported traveling frame moved and traveling uniformly with and beneath the elevator, and having a clutch device at each side, the operating mechanism of which projects above the surface of said frame and so as to be struck or acted upon by the weight or pressure of the elevator when it drops, substantially as herein described, for the purpose set forth.

In witness whereof I have hereunto set my hand.

CASSIUS CLAY PALMER.

Attest:

W. F. CLARK,  
EDWARD E. OSBORN.