

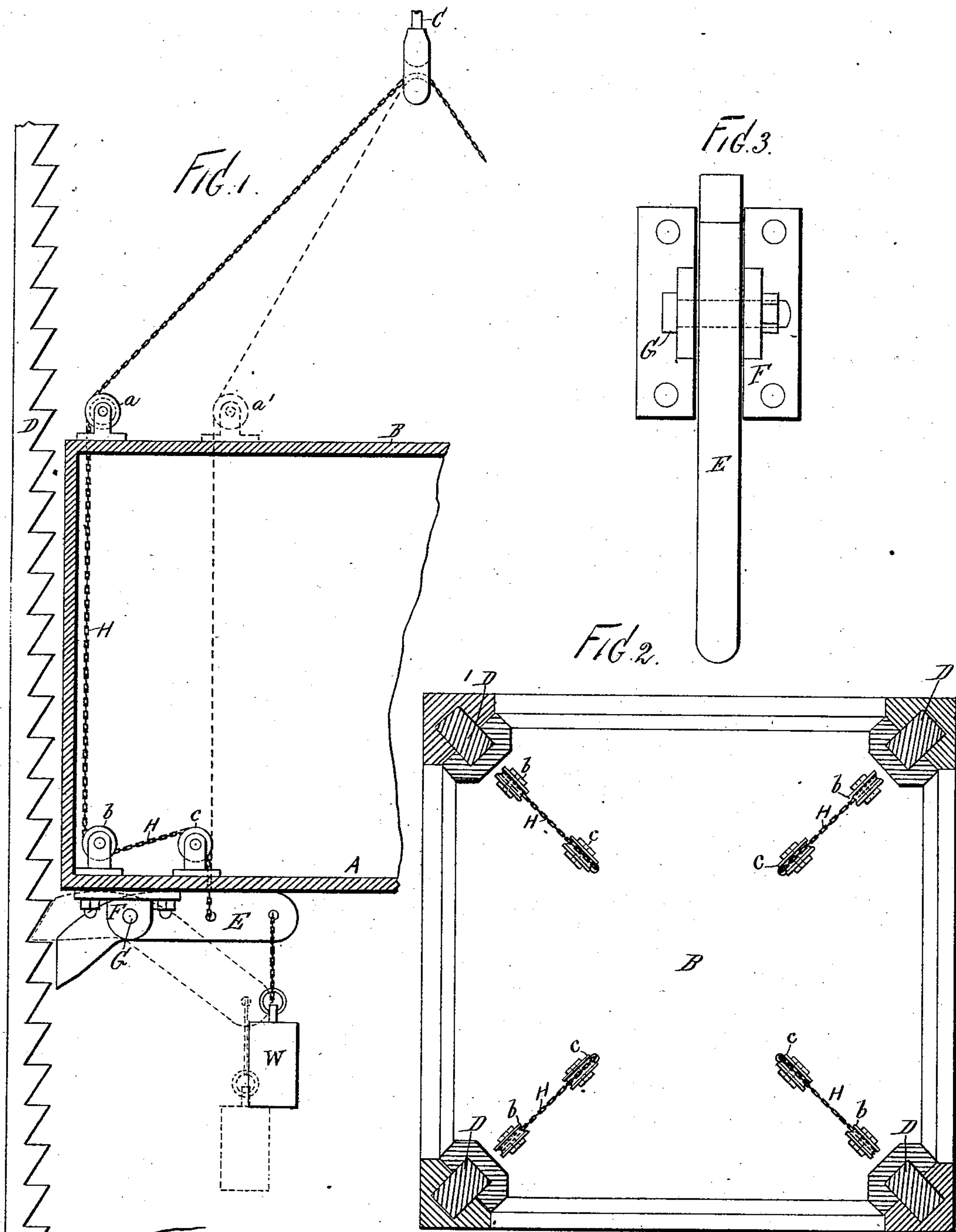
(No Model.)

A. FITZROY.

SAFETY APPLIANCE FOR ELEVATORS.

No. 289,905.

Patented Dec. 11, 1883.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## SAFETY APPLIANCE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 289,905, dated December 11, 1883.

Application filed October 3, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED FITZROY, of Brooklyn, county of Kings, and State of New York, have invented certain new and useful  
5 Improvements in Safety Appliances for Elevators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

10 My invention has relation to that class of devices which are employed, in connection with passenger and freight elevators, for the purpose of automatically preventing the car from descending in the event of breakage or  
15 parting of the hoisting rope or cable. These devices are ordinarily known as "safety appliances." Heretofore in this class of appliances it has been customary to employ spring-power for the purpose of operating catches or  
20 pawls of various patterns, and it has been frequently observed in cases of accident to the main hoisting cable or rope or the hoisting machinery connected therewith that the springs have become set and fail to perform their ex-  
25 pected offices for that reason, and also that they have failed to operate because of a set or bend in the cables connecting the spring-actuated devices and the main hoisting rope or cable, preventing the required movements of the  
30 spring.

The object of my invention is to provide a simple, cheap, durable, and efficient safety appliance for elevators, which will not depend upon spring-power for its required movement  
35 or operation, in which the pawls or stopping-levers are connected with the main hoisting rope or cable in such a manner that they will not interfere with the instantaneous movements of said pawls or levers at the time of  
40 accident or breakage, and which may be readily applied upon any elevator already constructed without material alteration of parts, and which will not be liable to damage or dis-  
45 arrangement, so that being once applied it is always ready for operation, requiring no attention so long as the elevator is continued in use. To accomplish all of this, my improve-  
50 ments involve certain new and useful arrangements or combinations of parts, peculiarities of construction, and principles of operation, all of which will be herein first fully described, and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a sectional elevation, showing a part of an elevator-car in  
55 its shaft, and having my improvements applied thereon. Fig. 2 is a horizontal section and plan view of the car upon a plane passing above the bottom thereof, and Fig. 3 is a plan of the under side of one of the safety levers or  
60 pawls.

In all these figures like letters of reference, wherever they occur, indicate corresponding parts.

A represents the bottom, and B the top, of  
65 the elevator-car, which car may be of any pattern or size and intended for use either for carrying passengers or freight. This car moves up and down in the shaft, being raised and lowered by an attached chain, rope, or cable,  
70 as C. The shaft, like the ordinary elevator-shafts, is provided with one, two, or more vertical ratchets, D D D, of iron or metal, intended to receive and hold the safety-pawls when-  
75 ever they are made to engage therewith, and through them to hold up the car or prevent its rapid descent in the shaft.

According to my invention I locate upon the under side of the bottom of the car or the tim-  
80 bers thereof one, two, or more solid and substantial levers, as E, the same being sustained in a box or bearing, F, amply strong, carrying the hinge-bolt G, and being itself solidly affixed upon said bottom. The levers E are  
85 so formed that when the long arms thereof bear upon the bottom of the car the opposite parts (on the other side of the hinge-bolt, which forms the fulcrum) shall ride entirely clear of the ratchets D, thus permitting the  
90 free movements of the car, and so that as soon as the long arms are allowed to drop the opposite parts will instantly rise and enter the adjacent space in the ratchet-bar, rendering it impossible for the car to descend. These le-  
95 vers are each connected with the main hoisting rope or cable, preferably by linked chains, substantially as at H, Fig. 1. The reason for preferring chains to cables in this situation is that the chain is not liable to bend or set in  
100 such manner as to prevent its free movement over the guiding-sheaves at the instant when it is required to move, and the cable is always open to this objection; but of course cables might be employed in place of the chains when



the situation or arrangement happens to be such as to admit of their employment without danger of their becoming set. The chain, as shown in full line in Fig. 1, is carried down  
 5 over a sheave, *a*, on top of the car, under another sheave, *b*, in the corner of the car, and over another, *c*, at a little distance from *b*, and thence down to its connection with the long arm of the lever. This arrangement is de-  
 10 signed to lead the chain well up into the corner of the car to economize space. In many instances it may be led away from the corners, as indicated by the dotted line in Fig. 1, in which case the sheave *a* takes the position *a'*,  
 15 and the chain or cable is carried down directly through the bottom of the car to the lever.

From the construction and arrangement so far described it will be seen that the weight of the car is supported upon the long arms of the  
 20 safety-levers, which are connected with the main hoisting cable or rope. In the event of accident to the rope or cable, as the breaking or parting thereof, or to the flexible connections which unite it with the levers, or to the  
 25 hoisting machinery, the long arms of the levers are instantly freed, they drop down, and cause the short arms to engage with the ratchet. To make this movement of the levers absolutely certain, I apply upon each a weight at  
 30 *W* sufficiently great for the purpose. The lever is applied to the bottom of the car, so as to sustain any weight which may be in the car and relieve the roof of strain. This weight, being small in comparison with the size of the  
 35 car, will move downwardly before the car can overcome the resistance of the air upon its extended under surface. The weight may be attached to the lever in any suitable way; or the long arm of the lever may be enlarged, if pre-  
 40 ferred, so that it will be much heavier than the short arm. With this attachment only one cable or rope, *C*, for hoisting is required.

The improved lever attachments may be applied in one corner of the car, or in two or  
 45 more, as preferred; or they may be located at

the sides or ends of the car, according to circumstances. When constructed and arranged substantially in accordance with the foregoing explanations, the improved device will be found to admirably answer the purpose or ob- 50  
 ject of the invention, as previously set forth.

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

1. In a safety appliance for elevators, the 55  
 herein-described lever hinged at a point upon the under side of the car, the long arm thereof being connected with the main hoisting rope or cable, and weighted as explained, and the opposite arm being bent, substantially as 60  
 shown, so as to ride free of the ratchets or to engage therewith, at the times and in the manner set forth.

2. In a safety appliance for elevators, the 65  
 weighted lever mounted and hinged upon the under side of the car, the flexible chain or cable running through the body of the car and connecting the lever with the main hoisting rope or cable, and a sheave upon the top of the car, over which the connecting chain or 70  
 cable is made to run, the several parts being arranged and combined substantially as shown and described.

3. In a safety appliance for elevators, the 75  
 combination of the weighted lever mounted and hinged upon the under side of the car, the flexible chain or cable running through the body of the car and connecting the lever with the main hoisting rope or cable, the sheave upon the top, and the two sheaves upon the 80  
 bottom of the car, all arranged for operation substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

ALFRED FITZROY.

Witnesses:

JOHN BUCKLER,  
 WORTH OSGOOD.