

Z. T. DANSEY.
SAFETY DEVICE FOR ELEVATORS.
APPLICATION FILED MAR. 3, 1909.

944,076.

Patented Dec. 21, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

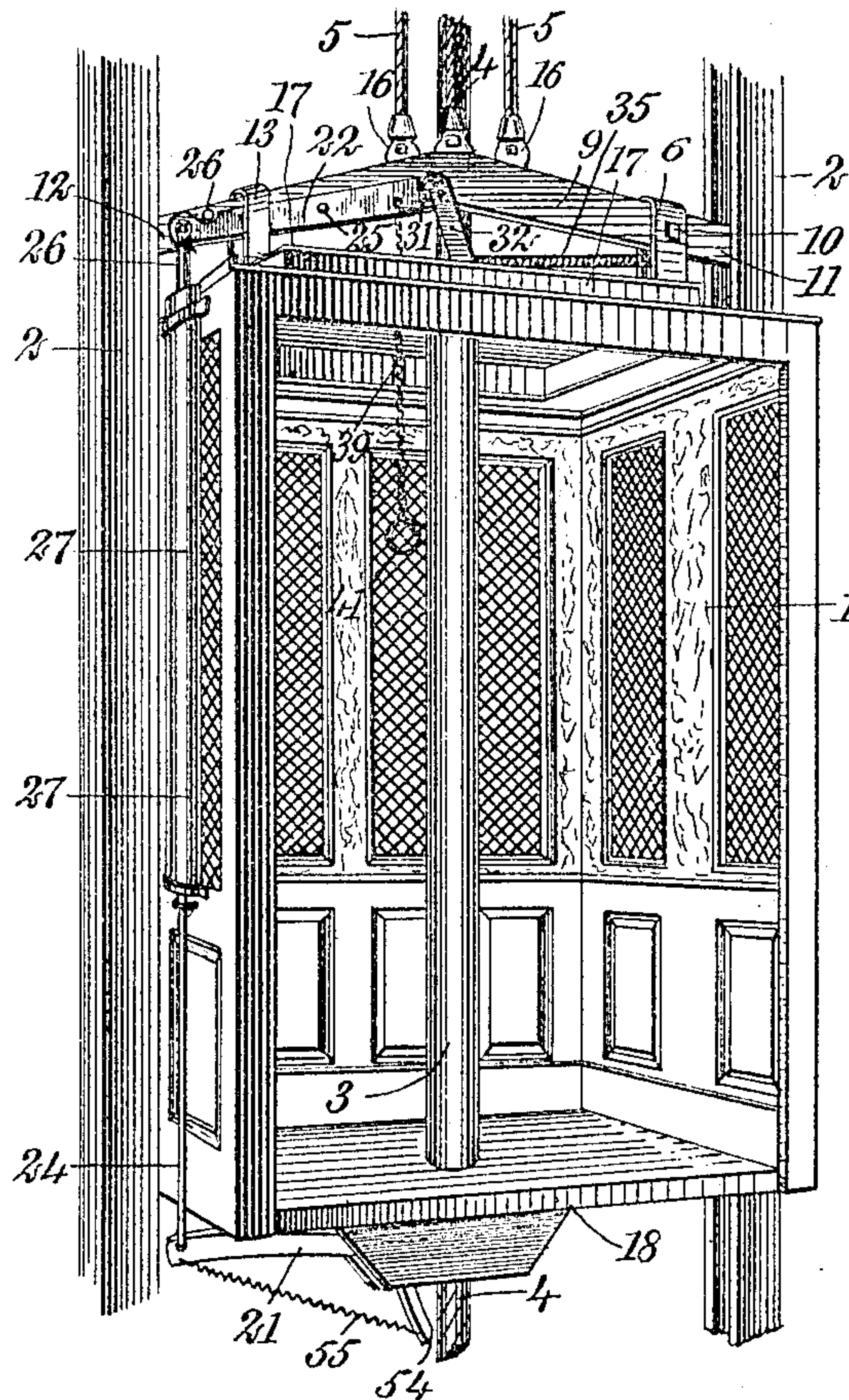
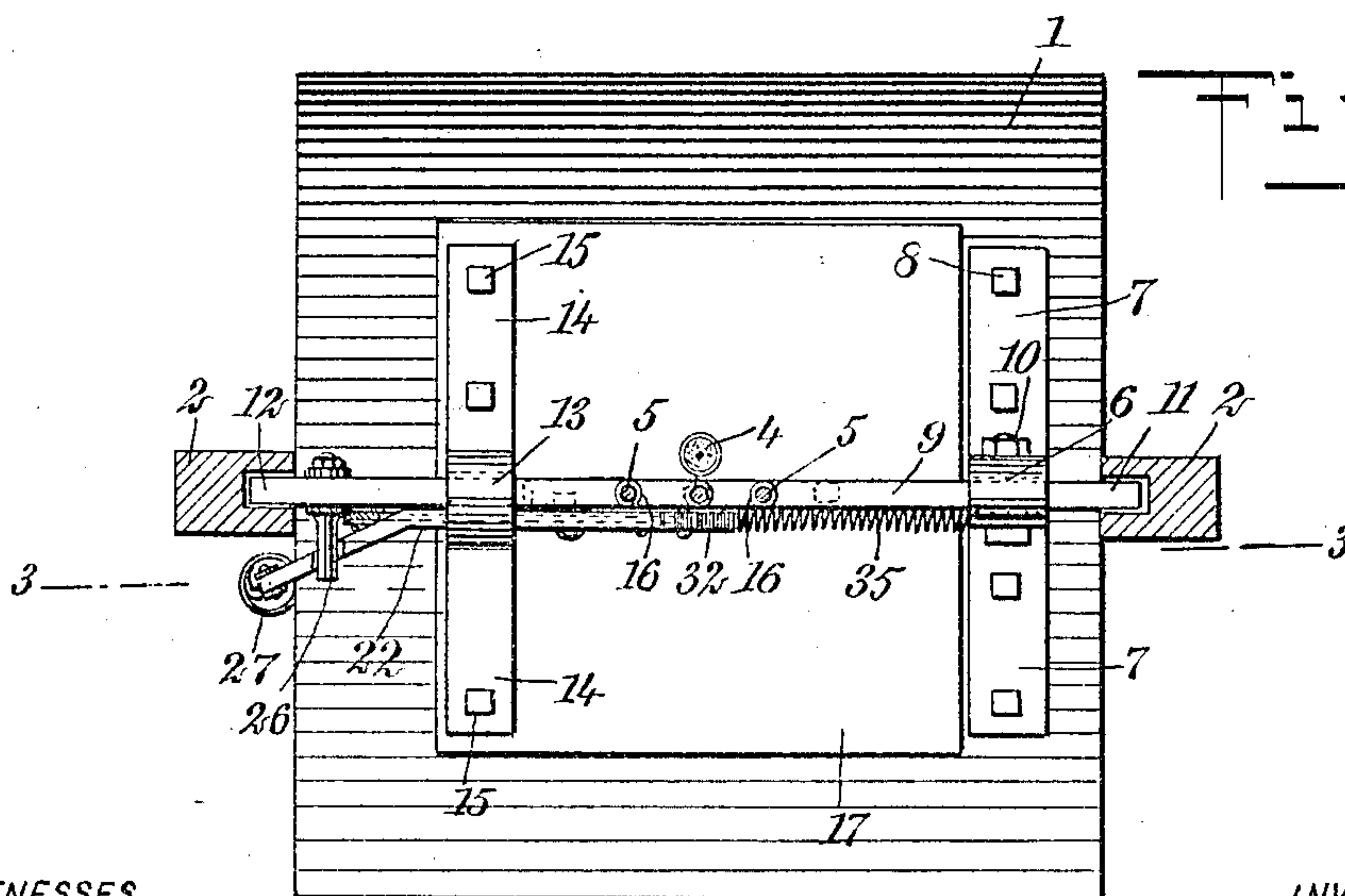


Fig. 2.



WITNESSES
Ben. Goffe
John R. Braehvogel

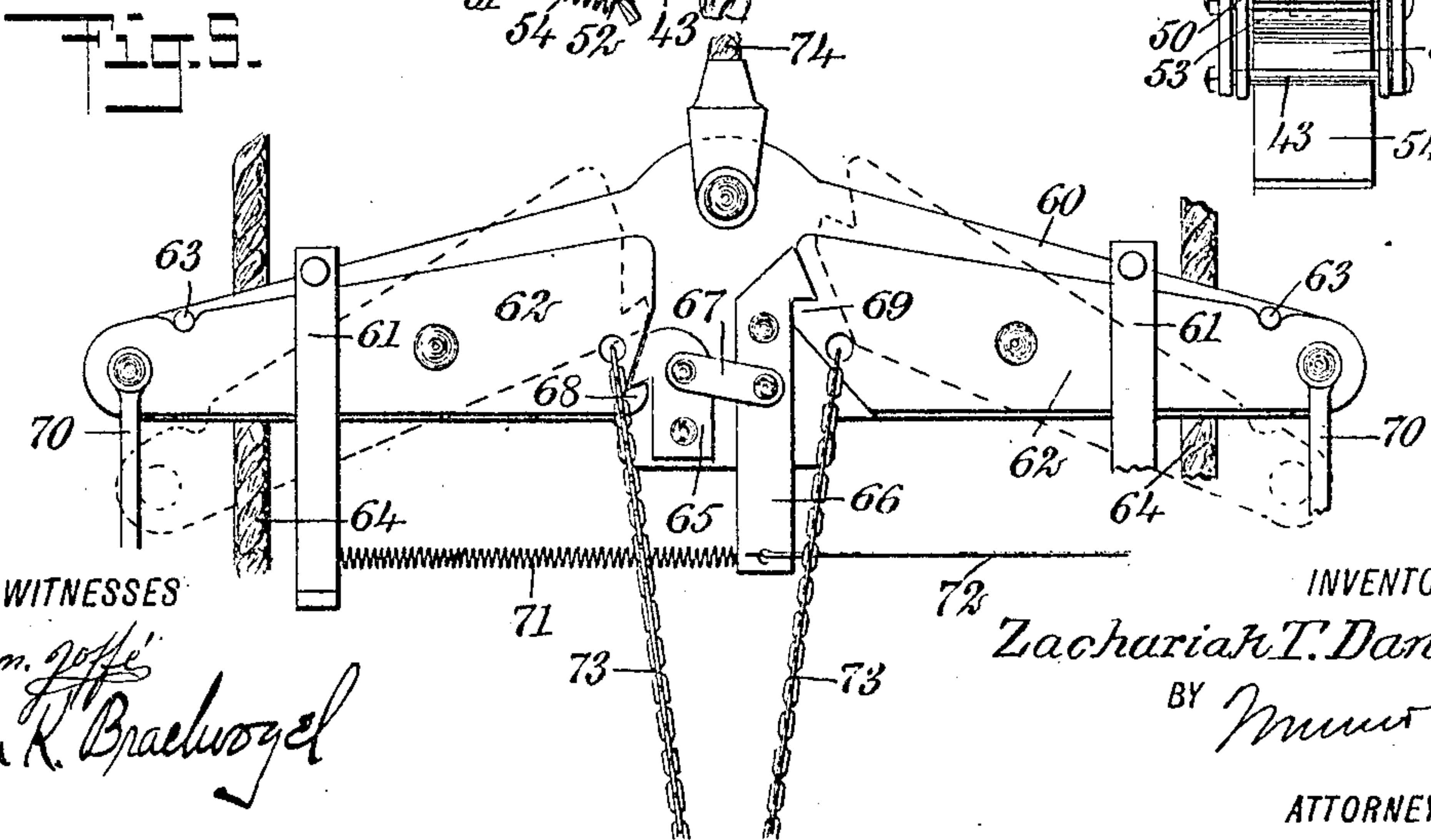
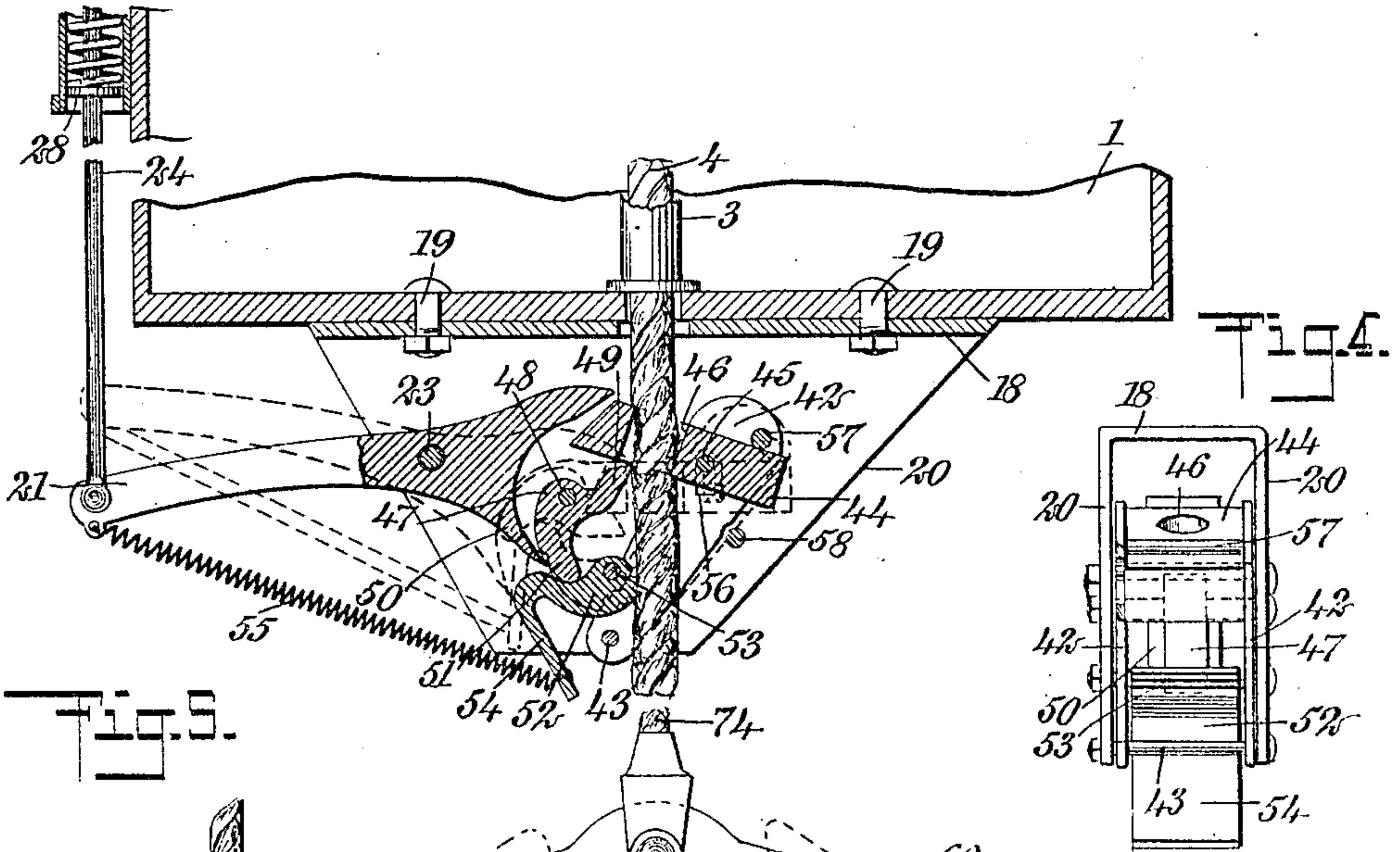
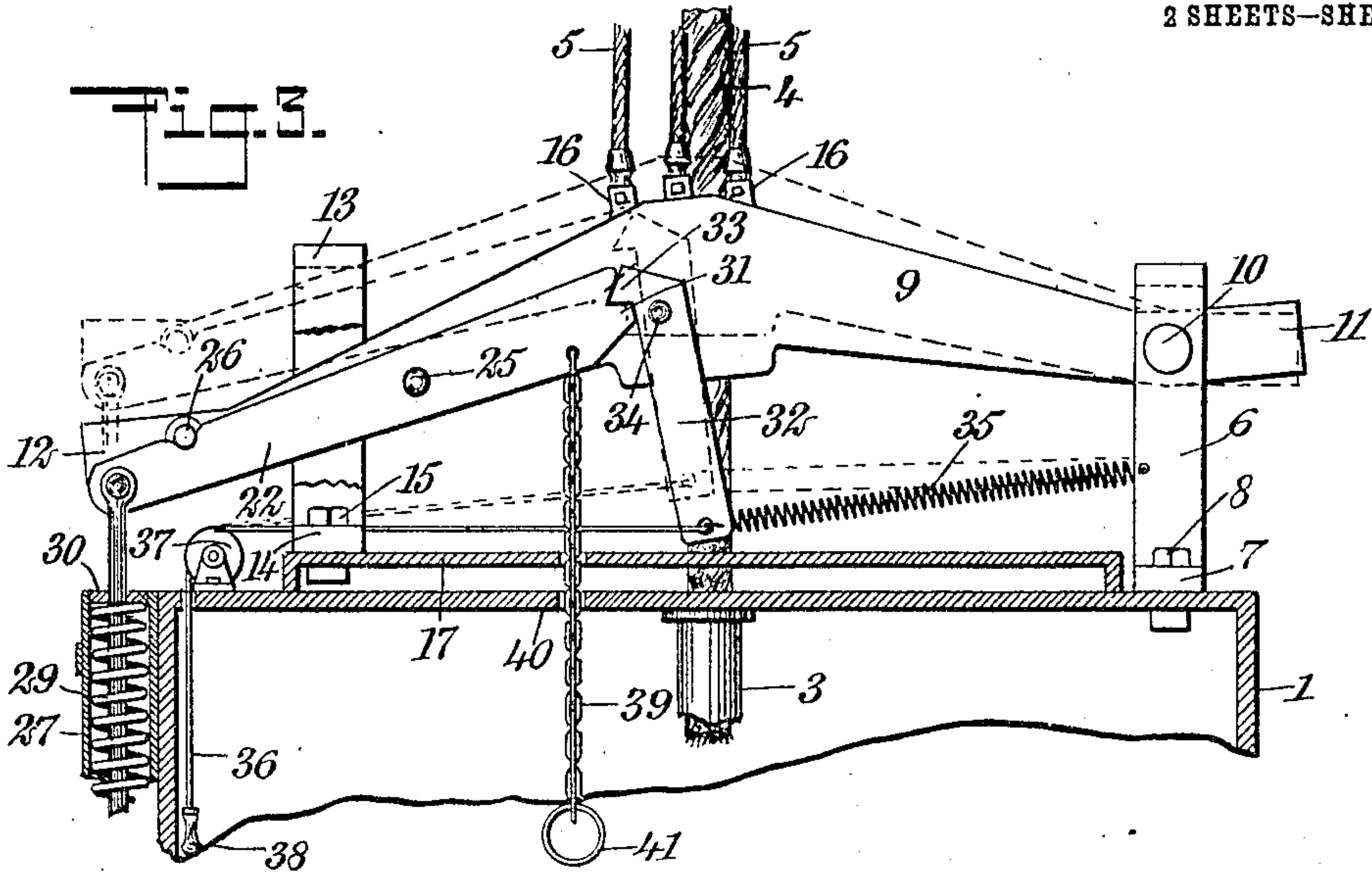
INVENTOR
Zachariah T. Dansey
BY *Mumford*
ATTORNEYS

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Bon. Joffe
John R. Braekvoegel

INVENTOR

Zachariah T. Dansey

BY *Mum Co*

ATTORNEYS

UNITED STATES PATENT OFFICE.

ZACHARIAH TAYLOR DANSEY, OF TOPEKA, KANSAS.

SAFETY DEVICE FOR ELEVATORS.

944,076.

Specification of Letters Patent. Patented Dec. 21, 1909.

Application filed March 3, 1909. Serial No. 481,112.

To all whom it may concern:

Be it known that I, ZACHARIAH T. DANSEY, a citizen of the United States, and a resident of Topeka, in the county of Shawnee and State of Kansas, have invented a new and Improved Safety Device for Elevators, of which the following is a full, clear, and exact description.

This invention relates to safety devices for elevators, and is particularly useful in connection with elevators operated by means of hoisting cables.

An object of the invention is to provide a simple, strong and efficient safety device, by means of which an elevator can be instantly brought to a full stop in case the hoisting cables or mechanism gives way, and which is directly controlled by the hoisting cables.

A further object of the invention is to provide a device of the class described, which includes an emergency support for the elevator car independent of the guides in the elevator well, and which is instantly operated to grip the emergency support in case the elevator cables or the hoisting mechanism gives way.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a perspective view of an elevator showing an embodiment of my invention applied thereto; Fig. 2 is a plan view of an elevator car having my invention mounted thereupon and showing the elevator guides, the emergency support and the hoisting cables in transverse section; Fig. 3 is an enlarged partial section on the line 3—3 of Fig. 2; Fig. 4 is an end elevation of a detail; and Fig. 5 is a side view of part of the mechanism on top of the car, of modified form.

Referring more particularly to the drawings, 1 represents an elevator car which may be of any preferred or common form, and which is arranged to travel up and down in an elevator well having the usual guides 2. A hollow column 3 is arranged within the car longitudinally of the well and has passing therethrough an emergency support 4. The emergency support is of course ar-

ranged longitudinally of the well, and consists of an elongated member of any suitable material or form, for instance, of a cable, a rod, bar or the like. The support is rigidly held in position at the top and bottom of the elevator well, and is of sufficient strength to carry the weight of the car and the contents thereof, independent of the hoisting cables 5 of the car. As the car travels up and down, the hollow column 3 slides along the emergency support 4.

A bearing bracket 6, is rigidly mounted by means of laterally disposed feet 7 and bolts 8 upon the top of the car 1. A yoke 9 is pivotally arranged between the sides of the bracket 6 by means of a pivot bolt 10. An end 11 of the yoke extends beyond the bracket and slidably engages one of the guides 2. The opposite end 12 of the yoke extends beyond the opposite side of the car and slidably engages another of the guides 2. A stop 13 is rigidly carried upon the top of the car by means of laterally disposed feet 14 and bolts 15, upon a supporting base 17 arranged upon the top of the car and has the sides arranged at the opposite sides of the yoke. The stop 13 limits the upward movement of the latter as is shown most clearly in Fig. 1. The hoisting cables 5 of the car are secured by means of suitable sockets 16 to the yoke, preferably near the center of the same. It will be understood that as long as the cables serve to raise or lower the car, the yoke 9 will be held in its upward position by the cable, as is shown in Fig. 1, and is indicated in dotted outline in Fig. 3.

Under the bottom of the car is located a frame 18, held in place by means of bolts 19 or the like, and substantially of inverted U-form, having the sides 20 spaced apart. A controlling lever member 21 is pivotally mounted between the sides 20 by means of a suitable pivot pin 23 and is connected with a lever 22 by means of a rod or member 24. The lever 22 is pivotally mounted through the agency of a pivot pin 25 or the like, upon the yoke 9. A stop 26 carried by the yoke serves to limit the upward movement of the lever 22, engaging in an edge recess of the lever. The rod 24 has its ends pivotally secured to the member 21 and the lever 22 respectively, and passes movably through a guard sleeve 27 located at the outside of the car. The member 24 has a rigid collar 28 which engages a helical spring 29 located

within the guard sleeve and mounted upon the rod 24. The upper end of the spring abuts against a head 30 of the guard sleeve and thus tends normally to depress the lever 22.

The end of the lever 22 remote from the rod 24 has a shoulder 31 adapted to be engaged by the nose 33 of a keeper 32 pivoted by means of a pin 34 upon the yoke. The keeper when in engagement with the shoulder 31, holds the lever in position such that it engages the stop 26, whereby the lever in turn holds the controlling member 21 in an inoperative position, as will appear more clearly hereinafter, provided that the yoke engages at the upper end of the stop 13.

A spring 35 connected with the bracket 6 and the lower end of the keeper 32, tends to hold the latter in a normal, operative position such that it is in engagement with the lever 22. A line 36 has one end secured to the keeper and passes over a guide pulley 37 to the interior of the elevator car, where it is provided with a knob or handle 38, which permits its manipulation within the car, to release the keeper and thereby to free the lever 22. A chain or like flexible member 39 depends from the lever 22 through an opening 40 in the roof, into the car, having a ring 41 or like grip to permit its operation to return the lever 22 to an operative position. It will be understood that the under side of the shoulder 31 and the outer face of the nose 33 are beveled so that the lever can move downward into position under the nose when the flexible member 39 is pulled downward to return the lever 22 to an operative position such that it is held by the keeper.

The emergency support 4 passes through a suitable opening in the bottom of the car and a registering opening of the frame between the sides of the latter. Carriers 42 are pivotally mounted by means of a pin 43, at the inside of the frame sides and are spaced, carrying therebetween a binding member 44 mounted in position by means of a pin 45, the ends of which are loosely held in slots 56 of the carriers 42. A stop 57 connecting the carriers, limits the movement of the binding member, while a stop 58 between the frame sides limits the movement in one direction of the carriers. The binding member has an opening 46 therethrough which receives the emergency support and which is so arranged that in a normal position of the binding member the latter can slide freely up and down upon the support. However, when the binding member is swung into an abnormal position, as is shown in Fig. 3, the opposite upper and lower edges of the opening 46 are forced into engagement with the emergency support and bind against the same, thereby tending to bring the car to a stop. A dog 47 is pivotally mounted by

means of a suitable pin 48, between the sides of the frame, and has a part 49 engaging at the under side of the binding member. The controlling member 21 has the inner end bifurcated and outwardly disposed, the lower horn 50 being adapted to engage a part 51 of the dog, so that the dog is controlled by the member. A grip 52 is pivoted by means of a suitable pin 53, between the sides of the frame, and has a serrated edge adapted to engage the emergency support in a certain position of the grip. The latter, furthermore, has an arm 54 connected by means of a helical spring 55, with the outer end of the controlling member 21.

In the position of the parts shown in Fig. 3, the hoisting cables 5 of the car have been released so that the yoke, under the influence of the spring 29, moves into its lowermost position. This movement causes the controlling member 21 to have its outer end swung downward, whereby the horn 50 of the controlling member operates the dog, to swing the binding member upward to cause it to grip the emergency support. At the same time, the downward movement of the outer end of the controlling member permits the grip to be forced inward by the part 51 of the dog so that it binds against the emergency support, and also assists in bringing the car to a stop. It will be understood that this operation is effected if the cables give way. However, if the elevator descends or ascends with excessive speed, without the rupture of the cables 5, so that the operator desires to bring the emergency stop into play, the line 36 is pulled downward and the keeper 32 is thus released from engagement with the lever 22; the latter then moves downward under the influence of the spring and the parts under the car are actuated as above described. It will be understood that when the yoke 9 moves downward, it carries the lever 22 with the yoke.

In Fig. 5 is shown a modified form of the device, in which a yoke 60 is mounted between the stop brackets 61 at the top of the car, and has two levers 62 similar in form to the lever 22 pivoted upon the yoke. Stops 63 perform functions similar to those of the stop 26. In this form of the device two emergency supports 64 are employed, preferably arranged to pass through diagonally opposite corners of the car. Keepers 65 and 66 pivoted upon the yoke and operatively connected by a link 67, engage shoulders 68 and 69 respectively, of the levers to hold them in inoperative positions. Rods 70 operatively connect the levers with mechanism underneath the car, similar to that shown in Fig. 3, and adapted to bind upon the respective emergency supports. A spring 71 serves to hold the keepers in operative positions, and a line 72 permits their release from within the car. Flexible members 73

depend from the levers and permit them to be returned to operative positions, from within the car. The yoke is connected with the hoisting cable 74.

5 Having thus described my invention, I claim as new, and desire to secure by Letters Patent:—

10 1. The combination, with an elevator well having the usual guides, a car arranged to travel in said well, and hoisting means for said car, of an emergency support, a member mounted upon said car and having a limited movement, said hoisting means being secured to said member, a movable lever controlled by said member, means tending to move said lever, a controlling lever member operated by the movement of said lever, and a grip controlled by said controlling lever member and adapted to coact with said support to stop said car.

25 2. The combination, with an elevator well having the usual guides, a car arranged to travel in said well, and hoisting means for said car, of an emergency support for said car and distinct from said guides, a member movably mounted upon said car, a stop limiting the movement of said member, said hoisting means being secured to said member, a movable lever controlled by said member, resilient means tending to move said lever, a controlling lever member connected with the lever, and a grip controlled by said controlling lever member and adapted to coact with said support to stop said car.

35 3. The combination, with an elevator well having the usual guides, a car arranged to travel in said well, and hoisting means for said car, of an emergency support for said car and distinct from said guides, a yoke pivotally mounted upon said car, a stop for limiting the movement of said yoke, said hoisting means being secured to said yoke, a swinging lever controlled by said yoke, a spring secured to said lever and serving to actuate said lever when said yoke is released, and a grip controlled by said lever and adapted to be actuated by the same to engage said support to stop said car.

50 4. A device of the class described, comprising an emergency support, a car movable longitudinally of said support, a member pivotally mounted upon said car, a stop limiting the movement of said member, hoisting means for said car secured to said member, a swinging lever engaged by said member, resilient means for actuating said lever, a grip adapted to co-act with said support to stop said car, a controlling lever member for controlling said grip, and a connection between said swinging lever and the controlling lever member to operate the latter when the said swinging lever is actuated.

65 5. A device of the class described, comprising an emergency support, a car movable longitudinally of said support, a yoke

pivotally mounted upon said car, a stop for limiting the movement of said yoke, hoisting means for said car secured to said yoke, a swinging lever controlled by said yoke, a spring secured to said lever and serving to actuate said lever when said yoke is released, and a grip controlled by said lever and adapted to be actuated by the same to co-act with said support to stop said car.

75 6. A device of the class described, comprising an emergency support, a car movable longitudinally of said support, a yoke pivotally mounted upon said car, hoisting means for said car secured to said yoke, a binding member adapted to engage said support to bring said car to a stop, a member controlling said binding member, and a connection between said yoke and said last-mentioned member, whereby said binding member is inoperative when said yoke is in a normal position.

90 7. A device of the class described, comprising an emergency support, a car movable longitudinally of said support, a yoke pivotally mounted upon said car, a stop for limiting the movement of said yoke, hoisting means for said car secured to said yoke, a binding member adapted to engage said support, a controlling member adapted to engage said binding member when in a predetermined position, to cause said binding member operatively to engage said support, a connection between said controlling member and said yoke, and a spring tending to force said controlling member into the predetermined position.

105 8. A device of the class described, comprising an emergency support, a car movable longitudinally of said support, a yoke pivotally mounted upon said car, a stop for limiting the movement of said yoke, hoisting means for said car secured to said yoke, a swinging lever controlled by said yoke, a keeper operable from the inside of said car and serving to hold said lever in a normal position, a binding member adapted to engage said support, a controlling member for said binding member, and a connection between said controlling member and said swinging lever.

115 9. A device of the class described, comprising an emergency support, a car movable longitudinally of said support, a yoke pivotally mounted upon said car, a stop for limiting the movement of said yoke, hoisting means for said car secured to said yoke, a swinging lever controlled by said yoke, a keeper operable from the inside of said car and serving to hold said lever in a normal position, a binding member adapted to engage said support, a controlling member for said binding member, a connection between said controlling member and said swinging lever, a spring controlling said connection and tending normally to depress said swing- 130

ing lever to operate said controlling member, said yoke serving to depress said swinging lever when said yoke is depressed.

10. A device of the class described, comprising an emergency support, a car movable longitudinally of said support, a yoke pivotally mounted upon said car, a stop for limiting the movement of said yoke, hoisting means for said car secured to said yoke, a swinging lever mounted upon said yoke, said yoke having a stop engaging said lever, a keeper engaging said lever and serving to hold the same against said stop, means for releasing said keeper from the inside of said car, a spring tending to maintain said keeper in locking position, grip mechanism adapted to engage said support, a controlling member for said grip mechanism, and an operative connection between said swinging lever and said controlling member.

11. A device of the class described, comprising an emergency support, a car movable longitudinally of said support, a yoke pivotally mounted upon said car, a stop for limiting the movement of said yoke, hoisting means for said car secured to said yoke, a binding member having an opening loosely receiving said emergency support in a normal position of said member, a dog controlling said member, a grip adapted to engage

said support, a controlling member adapted to operate said dog to cause said binding member and said grip to become operative when said controlling member is displaced from the normal position, a connecting rod between said controlling member and said yoke, and a spring tending normally to depress said yoke to cause said controlling member to become operative.

12. The combination with an elevator well having the usual guides, a car arranged to travel in said well, and hoisting means for said car, of an emergency support, a member mounted upon said car and having a limited movement, said hoisting means being secured to said member, a movable lever controlled by said member, a keeper serving to hold said lever in a normal position, means for releasing said keeper, means tending to move said lever, and a grip controlled by said lever and adapted to coact with said support to stop said car.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ZACHARIAH TAYLOR DANSEY.

Witnesses:

JAMES W. DANSEY,
OIMAI B. PRESTON.