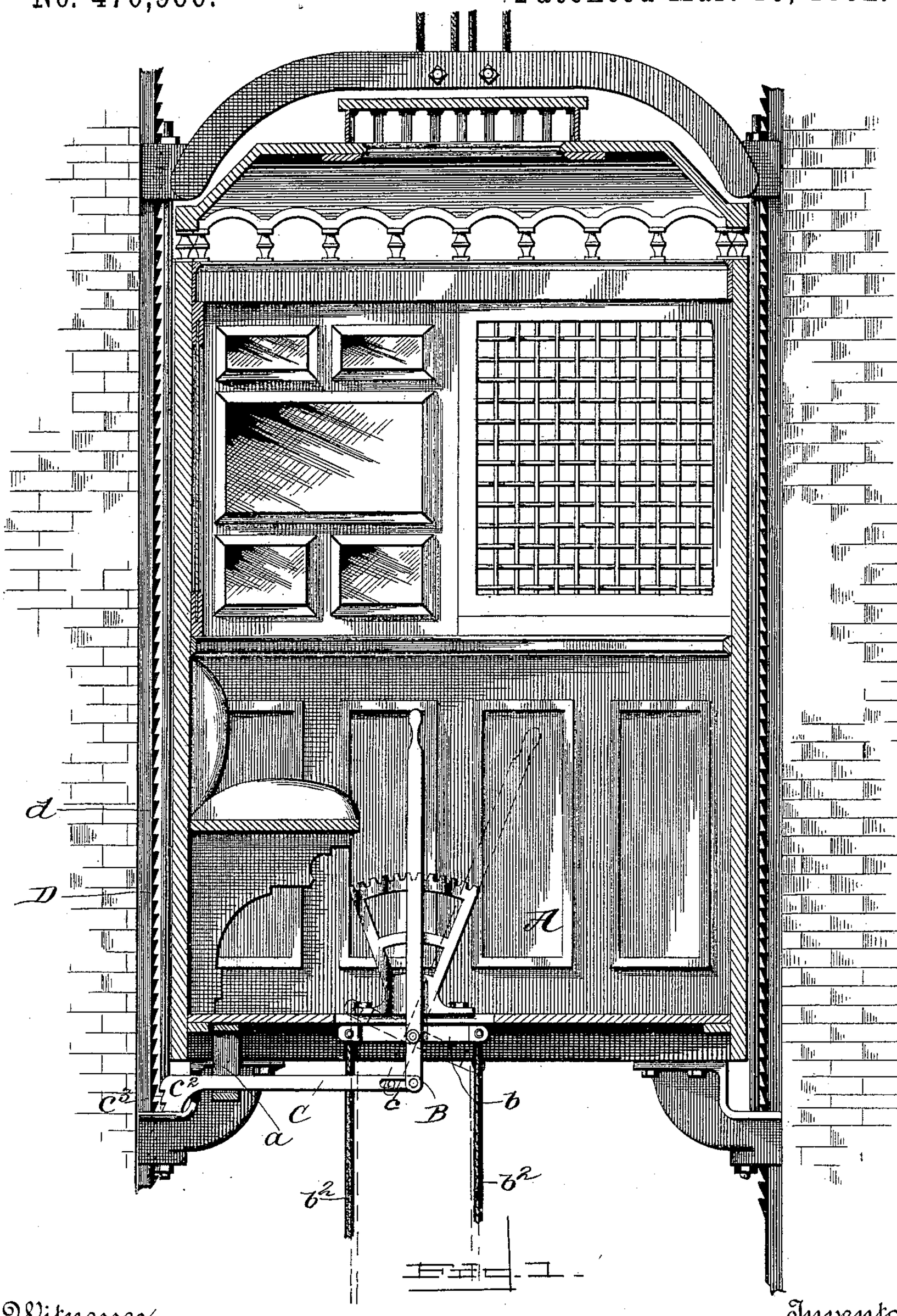
(No Model.) 2 Sheets—Sheet 1.

H. R. TRACY.

SAFETY DEVICE FOR ELEVATORS.

No. 470,960. Patented Mar. 15, 1892.



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(No Model.) 2 Sheets—Sheet 2.

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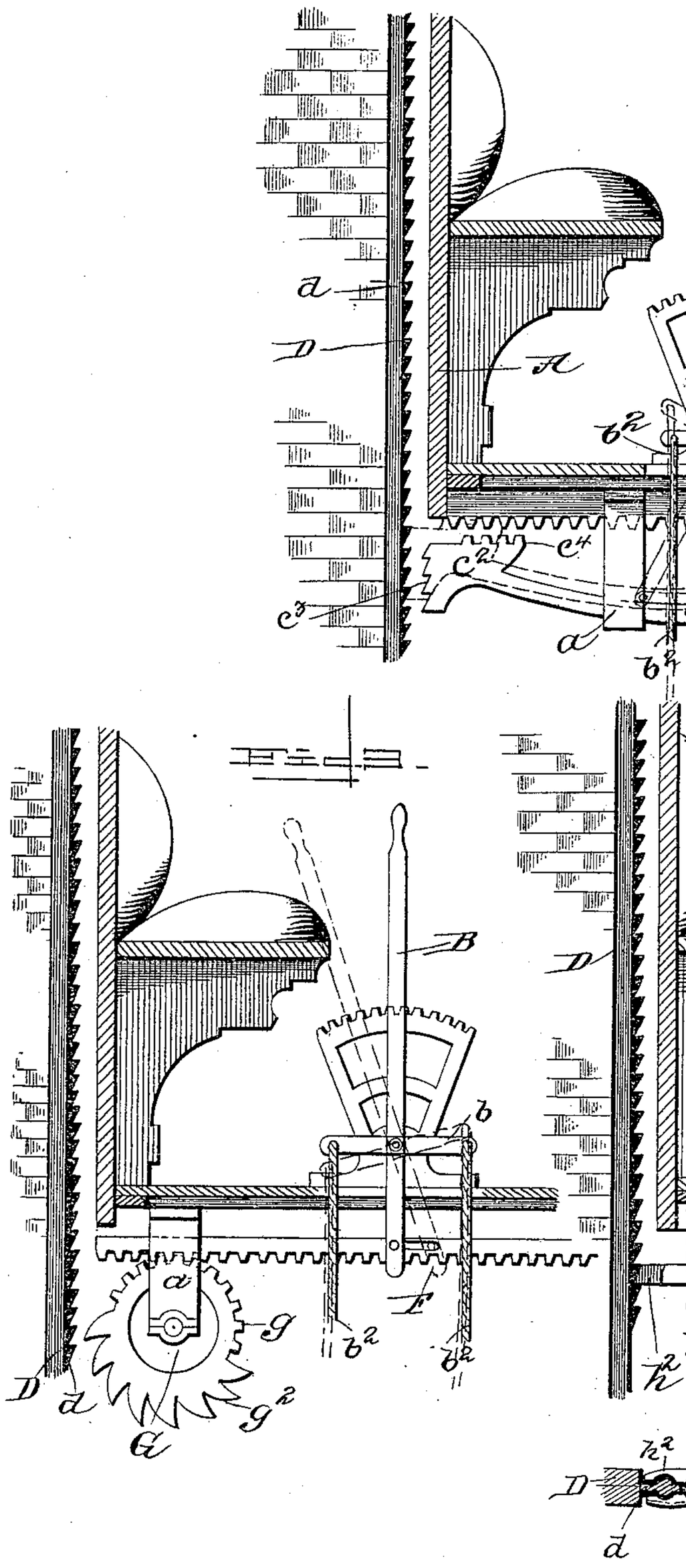

Fig. 2.

Fig. 3.

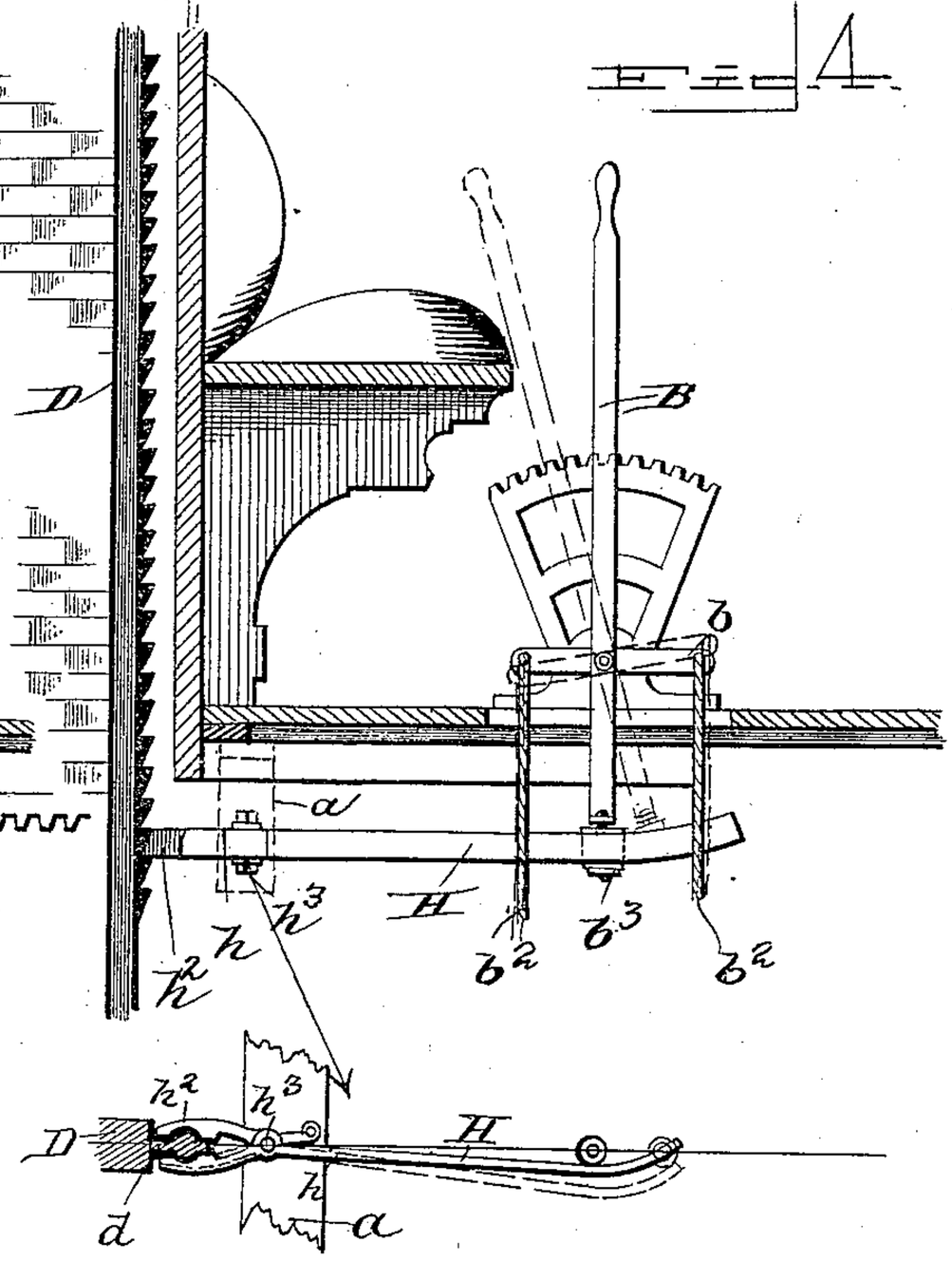

Fig. 4.

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UNITED STATES PATENT OFFICE.

HARRIET RUTH TRACY, OF NEW BRIGHTON, NEW YORK.

SAFETY DEVICE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 470,960, dated March 15, 1892.

Application filed April 21, 1891. Serial No. 389,825. (No model.)

To all whom it may concern:

Be it known that I, HARRIET RUTH TRACY, a citizen of the United States, residing at New Brighton, in the county of Richmond and State of New York, have invented certain new and useful Improvements in Safety Devices for Elevators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to elevators or lifts.

The present invention does not involve any particular valve mechanism or other device for bringing the power to bear to move the car. Hence no special form thereof is herein shown or described.

The object of the invention is in case of undesirable movement or undesirable continuation of movement of the car or cage, as upon failure of proper action on the part of the means employed to shut off power, to be able to arrest or retard the motion of the car or cage at the car or cage itself.

With this object in view the invention resides in means whereby in case of failure of the action of the controlling devices to stop the engine a stop mechanism on the car or cage is brought into action to restrain movement of the car or cage; and it consists particularly in an elevator or lift in which the connection to power-supply operates a stop, throwing said stop out to arrest or retard the motion of the car upon any failure of the connection to the power-supply to control the power, it being understood that by the stop mechanism the motion of the car or cage may be arrested completely in descent, so that the car or cage is prevented from falling, while in ascent, the stop mechanism then acting as a brake, it may be retarded, so that the car or cage is prevented from flying up.

The point of the invention is that should the usual connection from the car to the means of shutting off or shifting or shunting the power-supply prove ineffective, as from the stretching of the valve-rope, from non-action of an electrical cut-off or shunt, from loosening or breaking of connection, or from failure of a pulley-belt to shift, or from any other cause, the very act exerted to arrest or divert supply of power somewhat continued will bring into play other means for stopping the car or retarding its motion.

The invention may be applied to any form of mechanism for bringing power to bear and arresting it in the operation of elevators or lifts. I illustrate the invention in this case as applied to a class wherein valve-ropes to connect with a suitable valve or cut-off are operated by a lever in the car.

In the drawings, Figure 1 is a vertical sectional view of an elevator-car, showing in elevation valve-ropes attached to the ends of a rocking bar, an operating-lever with pawl and segmental rack, the lever being fixed to the rocking bar at the pivot thereof and extending somewhat below, showing also a straight slidable bar slotted at one end and there pivoted to the downward extension of the lever and at the other end provided with a head toothed on its outer side, and showing, finally, a vertical rack fixed in the elevator-shaft on the same side as and in the same vertical plane with the head. Fig. 2 is a vertical sectional view of a portion of an elevator-car, displaying a modification of the device illustrated in Fig. 1, showing the sliding bar curved, slotted in the middle by a straight slot, and here pivoted to the downward extension of the lever, and both ends of the bar provided with rack-teeth on the upper surface, showing, furthermore, a rack fixed on the bottom of the elevator-car. Fig. 3 is a vertical sectional view of a portion of an elevator-car, displaying another modification of the device illustrated in Fig. 1, showing a straight slidable bar, slotted, and at the slot pivoted to the downward extension of the lever, but the bar having rack-teeth on its under surface, and the head being a wheel having small teeth meshing with the teeth on the bar and larger teeth corresponding with the teeth on the outer side of the head to take against the vertical rack fixed in the elevator-shaft; and Fig. 4 is a vertical sectional view of a portion of an elevator-car, displaying another modification of the device illustrated in Fig. 1, showing an instrumentality like ice-tongs or grapples taking the place of the slidable bar, the lever having a roller on its lower end to bear against a projection on the inside of one handle of the tongs or against an inward bend of the handle itself to close

the jaws (the jaw of the handle borne against being broken away to show the other jaw—in this instance the farther one) and the jaws closing upon a vertical rod or bar in the shaft on the same side as and in the same vertical plane with the jaws.

In the drawings, A represents an elevator-car, in which is mounted adjacent to a suitable segmental rack a lever B, arranged in proper position to be grasped by the operator and provided with a pawl to take into the rack and be released therefrom in any suitable manner, as will be well understood. The lever is pivoted at the lower part of the car and extends downward below the pivot. Fixed to the lever at the pivot is a rocking bar *b*, to each end of which is attached a valve-rope or other suitable connections leading to the valve, cut-off, shift, shunt, or other device for turning on and shutting off, shifting, or shunting the power-supply. The car has depending from it below a hanger or keeper *a* to support the various forms of mechanism serving as stops.

In Fig. 1, C represents a straight slidable bar slotted at one end *c* and there pivoted to the lower end of the lever and at the other end provided with a head c^2, having teeth c^3 on its outer side, while arranged in the elevator-shaft on the same side as and in the same vertical plane with the head c^2 is a fixed vertical bar D, provided with teeth *d*. In the operation of the device here, it being understood that the lever is to be moved into the position indicated by dotted lines in the figure suitably to operate the valve, cut-off, shift, shunt, or the like through the connections b^2 to stop the elevator, should the valve or the like fail properly to operate further movement of the lever in the same direction will move the bar C carrying its head with the teeth into engagement with the teeth of the vertical bar D.

In Fig. 2 the slidable bar C′ is curved and a straight slot *c* is in about the middle, and it is there pivoted to the operating-lever B. The head c^2 has the teeth c^3, and at the upper part at its ends the bar is provided with rack-teeth c^4 to take into the teeth of a rack E, fixed on the bottom of the elevator-car. In this form, the center of gravity of the bar being at or somewhat in advance of the slot, or the bottom of the hanger acting as a guide for the lower curved side of the bar, the lever having been moved into the position suitably to operate the valve or the like through the connections b^2 to stop the elevator and the valve or the like having failed properly to operate further movement of the lever in the same direction, as indicated by the dotted lines, will move the bar C′ into engagement. In this form the lever when moved into a position indicated by dotted lines in the figure moves the bar C into contact both with the rack D and with the rack E, thus insuring a very firm hold against descent.

In Fig. 3 the bar C is represented by a slidable rack-bar F, the head being substituted by a wheel G, which is mounted in the hanger and has small teeth *g*, meshing with those on the rack-bar F, and on the opposite portion of its periphery larger teeth g^2. In this form the lever when pushed beyond a position indicated by dotted lines in the figure moves the rack-bar to the right, turning the wheel in the same direction and bringing the long teeth into contact with the rack fixed in the elevator-shaft.

In Fig. 4 the lever B is provided at its lower end with a roller b^3, which takes within against the inward curved or bulged portion of an arm *h* of a device H, like ice-tongs or grippers, the other arm being marked h^2 and the two arms being pivoted together at h^3 in the hanger, beyond which are the jaws, and these extend on each side of the bar D. In this form, it being understood that the lever is to be moved into the position indicated by dotted lines in the figure suitably to operate the valve, cut-off, shift, shunt, or the like through the connections b^2 to stop the elevator, should the valve, cut-off, shift, shunt, or the like fail properly to operate to stop the elevator further movement of the lever in the same direction will cause the roller to close the jaws, gripping tightly the bar D.

Having thus described my invention, I claim—

1. In an elevator or lift, the combination of controlling means connected with the power-supply, a stop device normally inactive, and connections whereby unusual or excessive movement of the controlling means operates said stop device, all substantially as described.

2. In an elevator or lift, the combination of controlling means connected with the power-supply, a shifting device on the car or cage, a stop device normally inactive, and connections whereby unusual or excessive movement of the shifting device operates said stop device, all substantially as described.

3. The combination of the lever B, the rocking lever *b*, to which the lever B is fixed, the slotted bar to which the lever B is connected at it its lower end, and the toothed head to act with a fixed rack, as set forth.

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

HARRIET RUTH TRACY.

Witnesses:

THOS. T. SHERMAN,

FRANCIS T. C. JUNKIN.