No. 756,811. PATENTED APR. 12, 1904.

C. W. BALDWIN, DEC'D.

M. E. BALDWIN, EXECUTRIX.

SAFETY DEVICE FOR ELEVATORS.

APPLICATION FILED SEPT. 27, 1900.

NO MODEL. 5 SHEETS—SHEET 1.

Fig. 2.

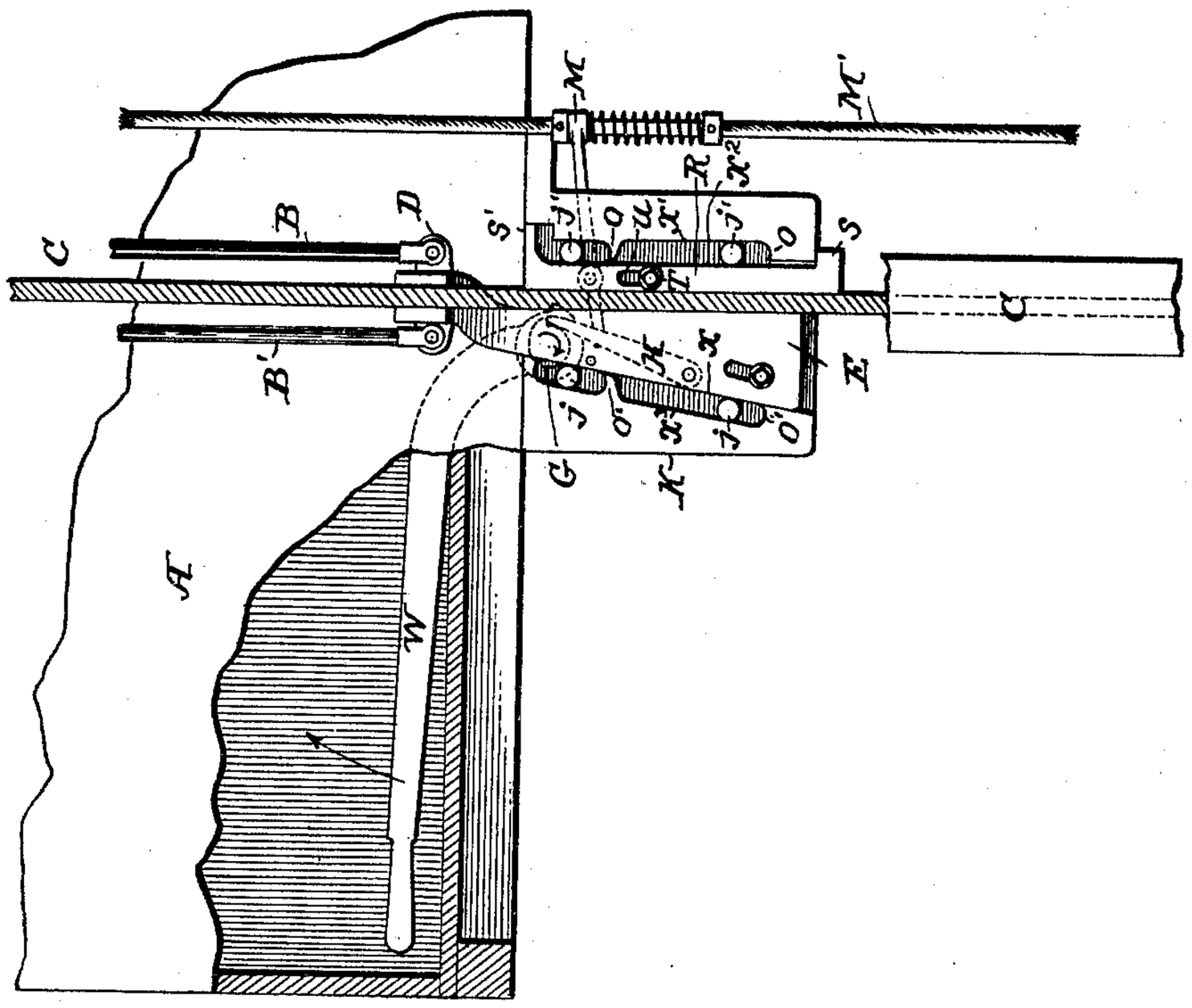
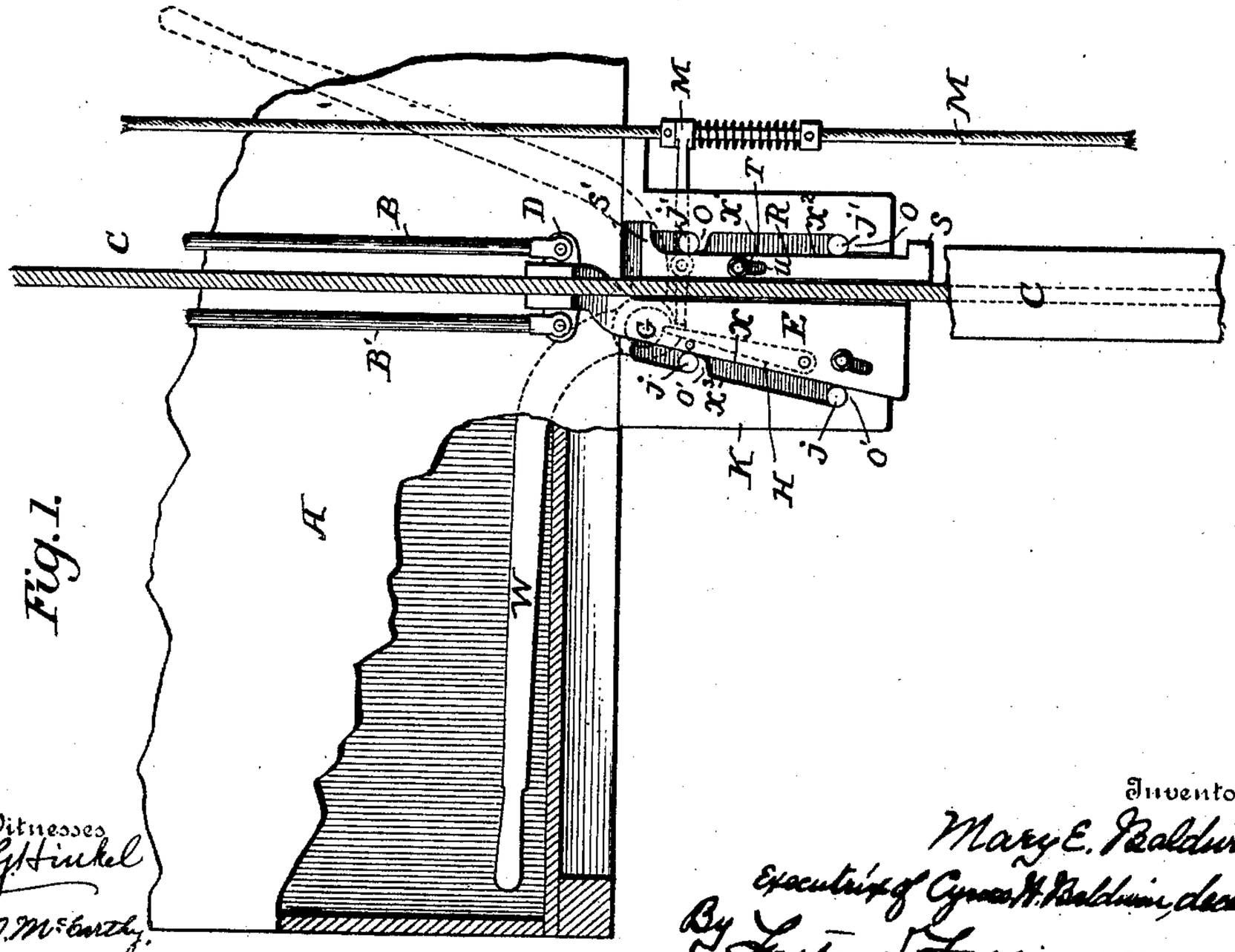


Fig. 1.



Witnesses
J. H. Hinkel
J. J. McGarty.

Inventor
Mary E. Baldwin
Executrix of Cyrus W. Baldwin, deceased
By Foster & Freeman Attorneys

No. 756,811. PATENTED APR. 12, 1904.

C. W. BALDWIN, DEC'D.

M. E. BALDWIN, EXECUTRIX.

SAFETY DEVICE FOR ELEVATORS.

APPLICATION FILED SEPT. 27, 1900.

NO MODEL. 5 SHEETS—SHEET 2.

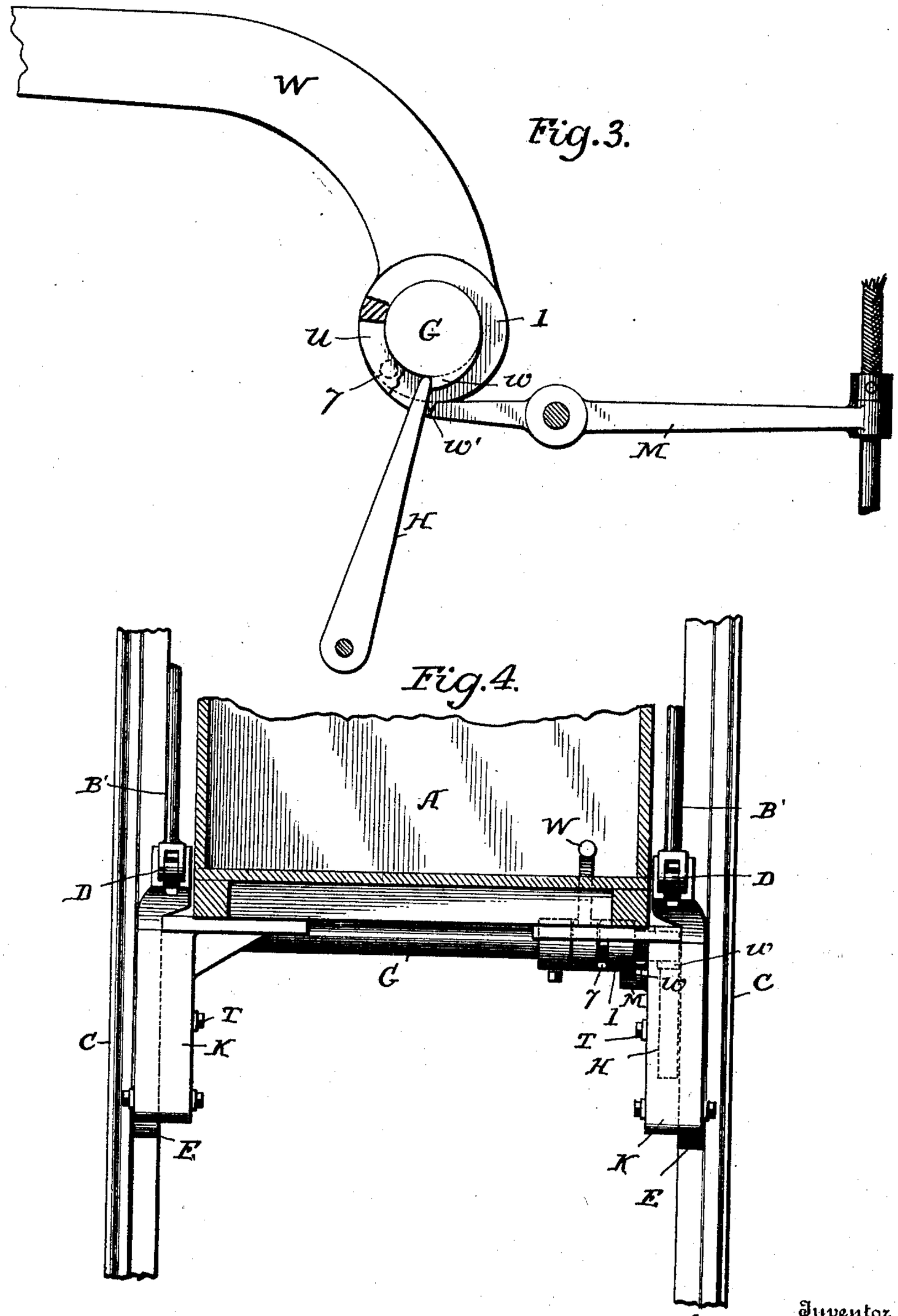


Fig. 3.

Fig. 4.

Witnesses
J. H. Hinkel
J. J. McCarthy.

Inventor
Mary E. Baldwin
executrix of Chas. W. Baldwin deceased
By Foster & Freeman
Attorneys

No. 756,811. PATENTED APR. 12, 1904.

C. W. BALDWIN, DEC'D.

M. E. BALDWIN, EXECUTRIX.

SAFETY DEVICE FOR ELEVATORS.

APPLICATION FILED SEPT. 27, 1900.

NO MODEL. 5 SHEETS—SHEET 3.

Fig. 7.

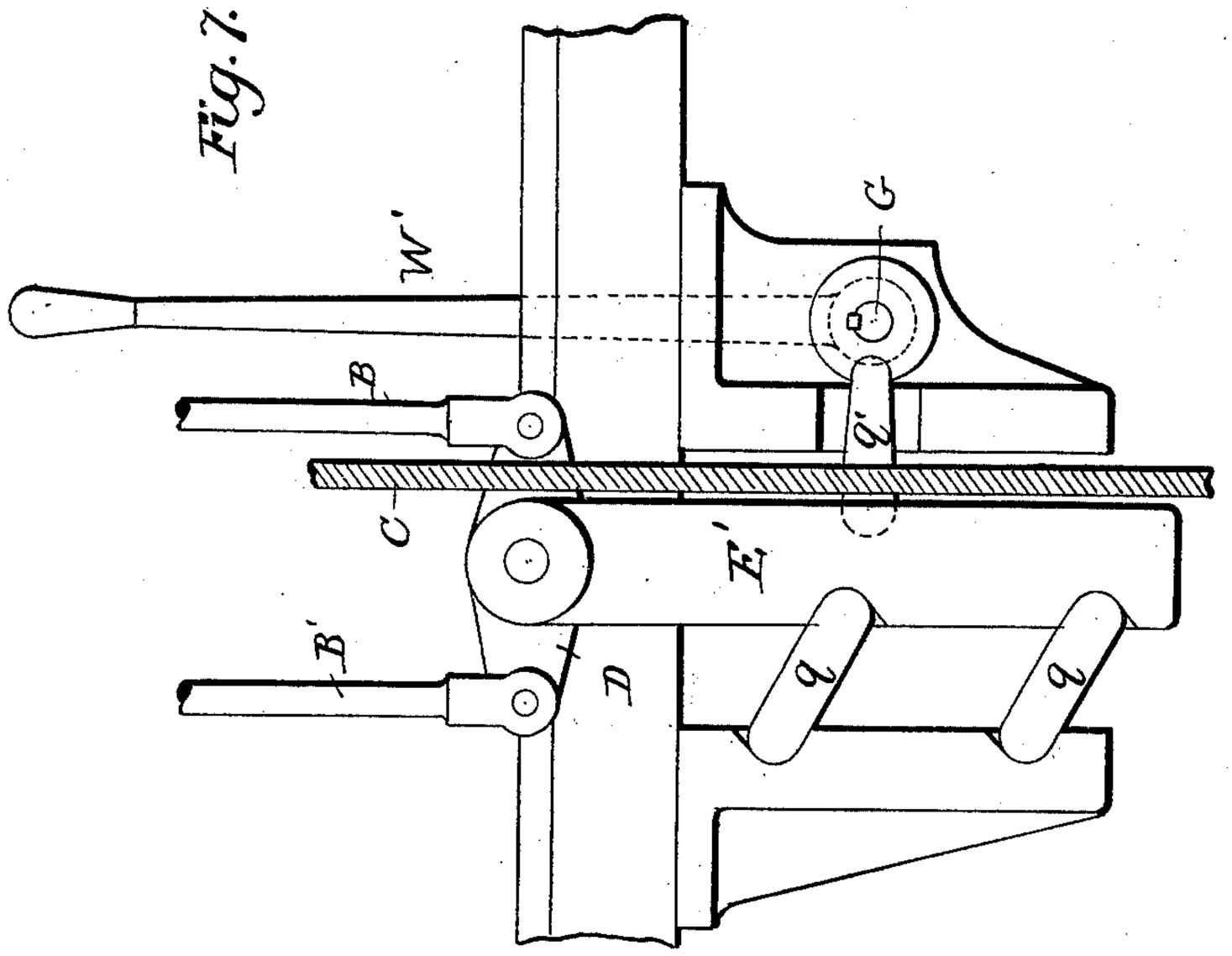
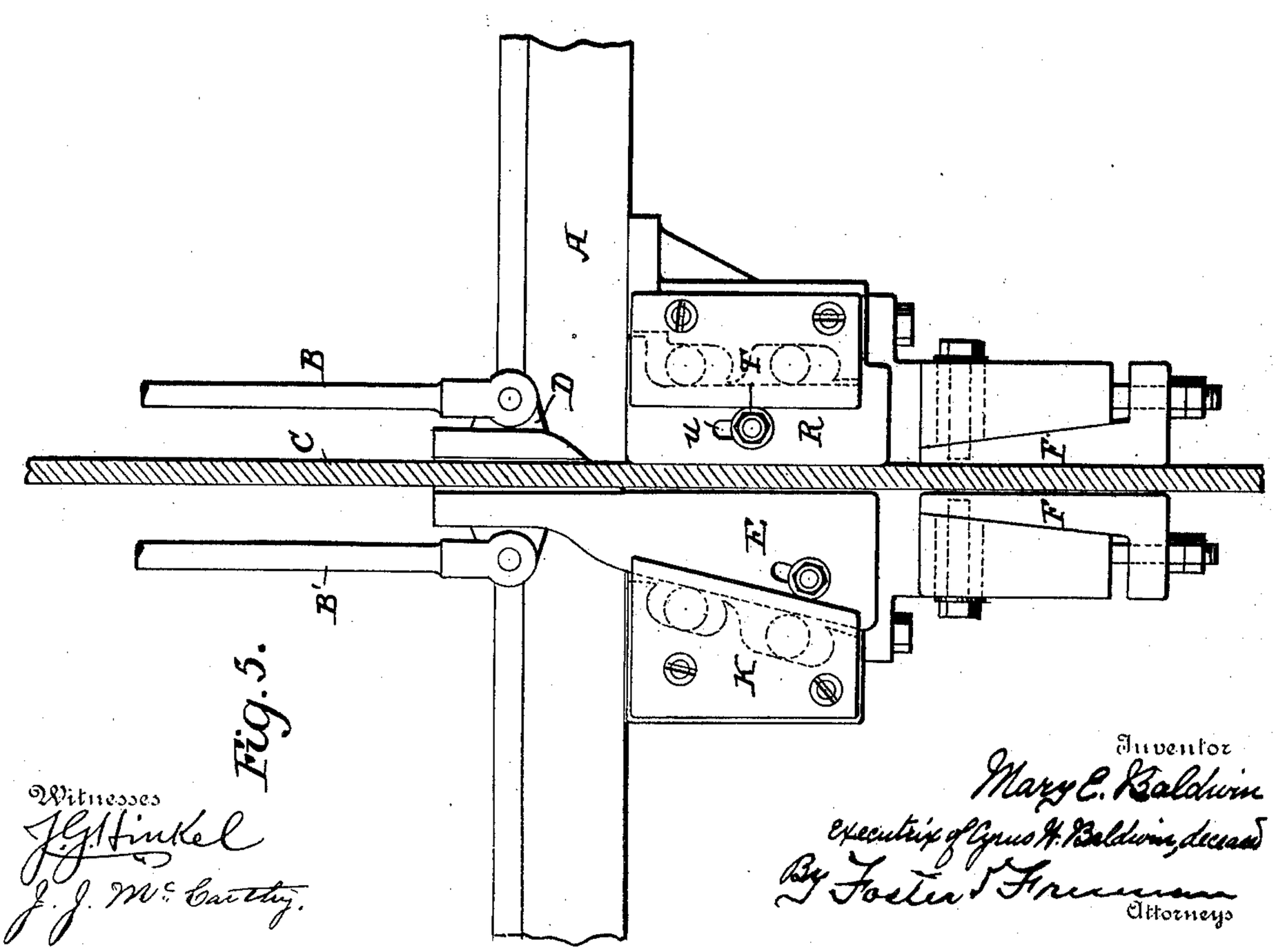


Fig. 5.



Witnesses
J. G. Hinkel
J. J. McCarthy.

Inventor
Mary C. Baldwin
executrix of Cyrus W. Baldwin, deceased
By Foster & Freeman
Attorneys

No. 756,811. PATENTED APR. 12, 1904.

C. W. BALDWIN, DEC'D.

M. E. BALDWIN, EXECUTRIX.

SAFETY DEVICE FOR ELEVATORS.

APPLICATION FILED SEPT. 27, 1900.

NO MODEL. 6 SHEETS—SHEET 4.

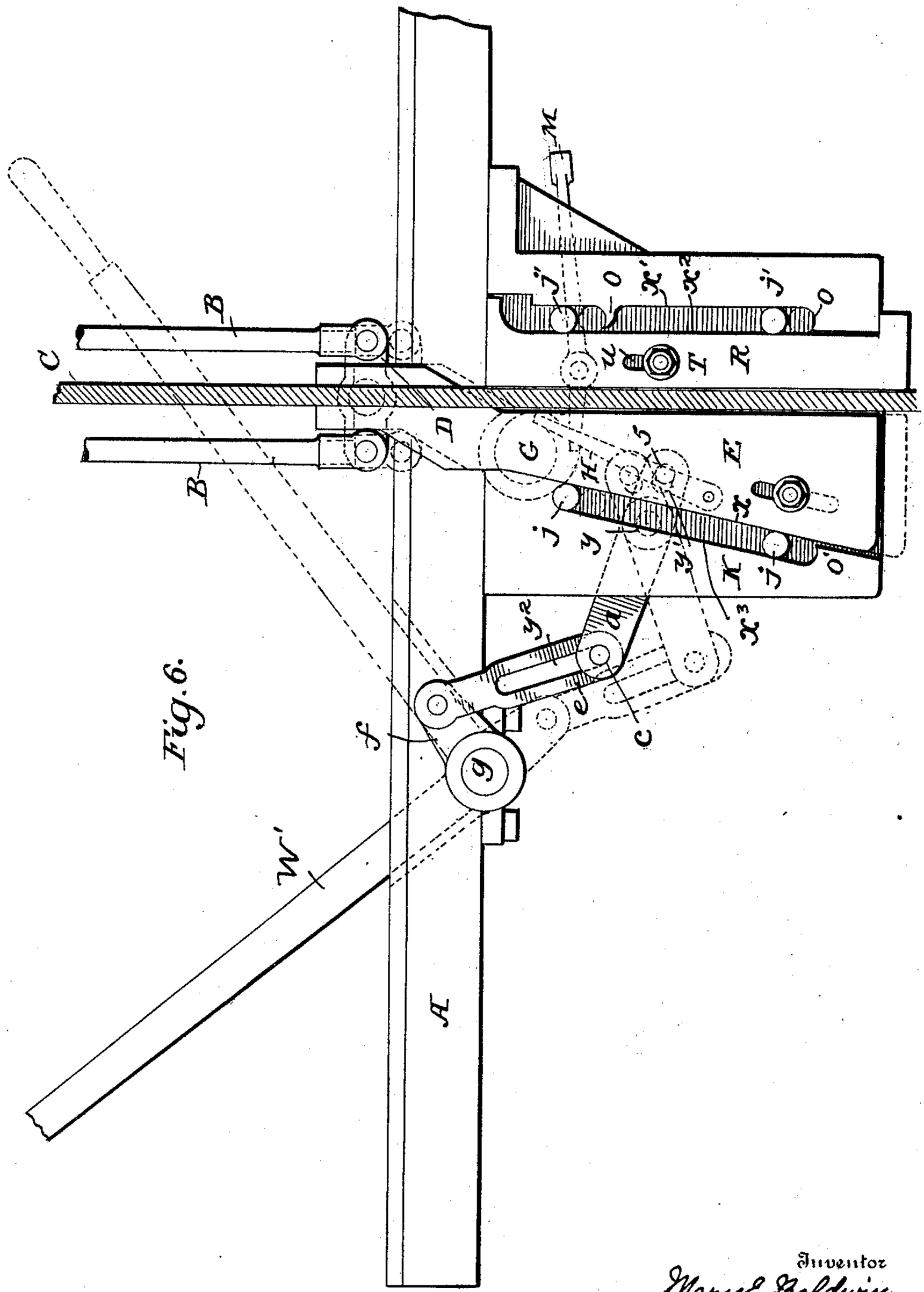


Fig. 6.

Witnesses
J. J. Hinkel
J. J. McCarthy.

Inventor
Mary E. Baldwin
executrix of Cyrus W. Baldwin, deceased
By Foster & Freeman
Attorneys

No. 756,811. PATENTED APR. 12, 1904.

C. W. BALDWIN, DEC'D.

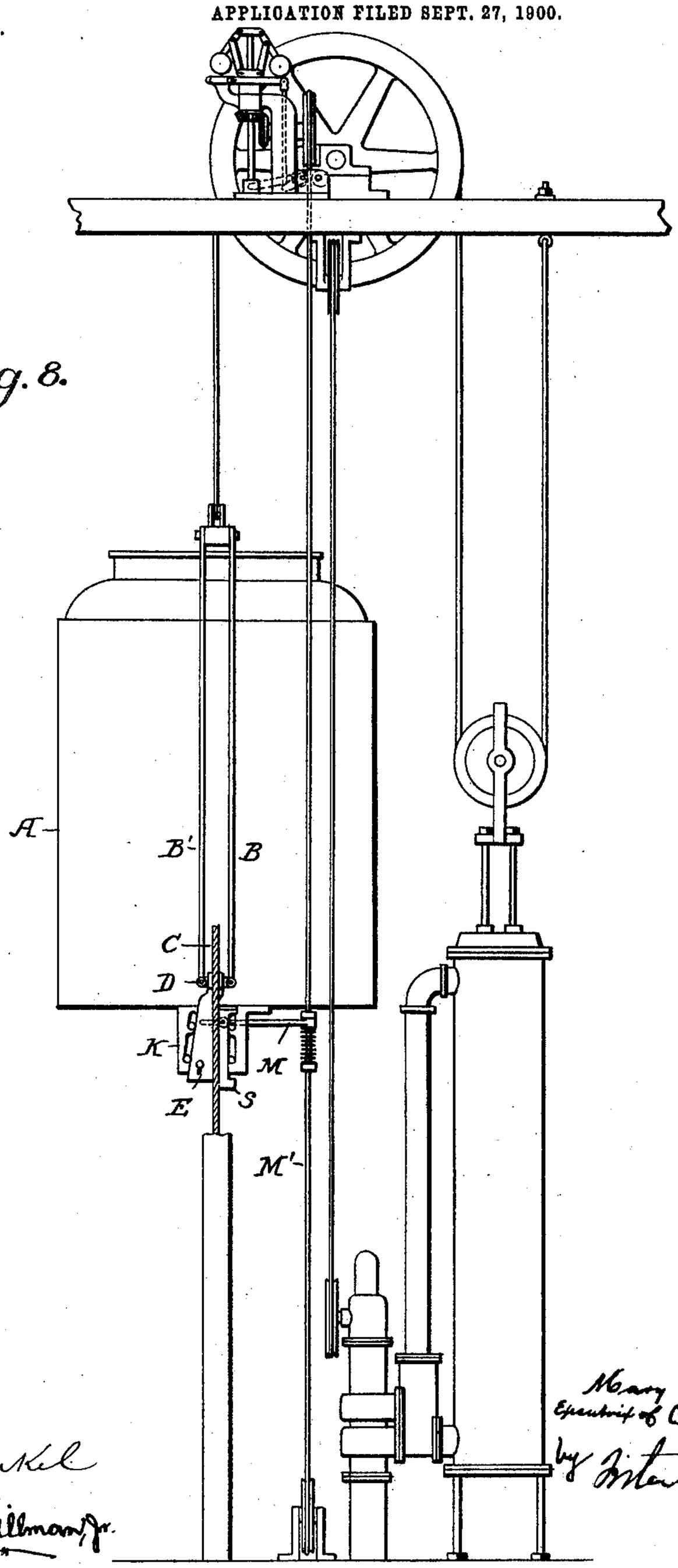
M. E. BALDWIN, EXECUTRIX.

SAFETY DEVICE FOR ELEVATORS.

APPLICATION FILED SEPT. 27, 1900.

NO MODEL. 5 SHEETS—SHEET 5.

Fig. 8.



Witnesses

J. G. Hinkel

Hon. Tillman, Jr.

Inventor

Mary E. Baldwin,
Executrix of Cyrus W. Baldwin, deceased,
by Peter Fenwick

Attorneys

No. 756,811. Patented April 12, 1904.

UNITED STATES PATENT OFFICE.

MARY E. BALDWIN, OF YONKERS, NEW YORK, EXECUTRIX OF CYRUS W. BALDWIN, DECEASED, ASSIGNOR TO THE OTIS ELEVATOR COMPANY, OF EAST ORANGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SAFETY DEVICE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 756,811, dated April 12, 1904.

Application filed September 27, 1900. Serial No. 31,276. (No model.)

To all whom it may concern:

Be it known that CYRUS W. BALDWIN, deceased, late a citizen of the United States, and a resident of Yonkers, Westchester county, State of New York, did during his lifetime invent certain new and useful Improvements in Safety Devices for Elevators, of which the following is a specification.

This invention relates to safety apparatus for elevators.

Heretofore the safety devices upon the cages of elevator apparatus have been operated in different ways and sometimes by cable connection with the counterweights or traveling weights, &c.

This invention consists in connecting the safety devices of whatever kind directly or indirectly with the suspension-cables, so that the cage practically is carried by the safety devices, but is normally supported so that its full weight may be thrown into action when required to put such safety device into active operation to retard or arrest the cage.

In the accompanying drawings, Figures 1 and 2 are side views of part of a cage and safety devices, showing the parts in different positions. Fig. 3 is a detached end view of the cage-shaft and adjuncts in part section. Fig. 4 is a front view of the parts shown in Figs. 1 and 2, and Figs. 5, 6, and 7 are views illustrating modifications. Fig. 8 is an elevation of an elevator apparatus with my improvements.

The platform or cage A of suitable construction slides between usual guides C, and the supporting ropes or cables B B′ are operated in any usual or suitable manner. The cage, however, is not connected directly to said cables; but the cables at each side of the cage are connected with the safety devices, as with one or more wedges E, upon which the cage normally rests (through suitable intermediate devices) and which wedges are normally out of contact with the guides. The wedges lie within recesses of brackets K, secured to the bottom of the cage, and each wedge has an inclined face x adapted to bearings of the bracket, so that when the wedge is permitted to move upward (or, what is the same, when the cage can move downward upon the wedges) the latter will be forced inward into contact with the guides, the whole weight of the cage and its contents in such case acting with a wedge-like action upon the inclined faces of the wedges to force them against the guides with such pressure as will speedily arrest the movement of the cage and clamp it to the guides.

It is of course necessary that there shall be a bearing for engaging the opposite face of the guide brought, as above stated, into contact with the wedge, and if this face is directly upon the bracket K it will be seen that the cage could not be released by an upward movement without sliding such face upon the guide while the latter was tightly gripped, which would in many cases be almost impossible. To obviate this difficulty, there is provided a movable shoe R between an inner face x' of the bracket and the opposite face of the guide.

It is preferred to provide the shoe R with a vertical face x^2, bearing upon the rollers j'', normally seated on projections o o, but capable of rolling between the face x' and the corresponding face x^2 of the shoe. The shoe is capable of a relatively upward movement, limited by a lug s, and a downward movement, limited by a lug s', and is held so as to slide against the face of the bracket by a bolt T passing through a slot u.

When the wedge E takes its bearing against the guide C on one side, the shoe R is drawn against the guide on the opposite side, and the parts are clamped against the guide with great pressure by the time the cage has been arrested. When, however, an upward movement is imparted to the cage in any suitable manner, there will be practically little resistance thereto, as the inclined bearing of the bracket K will be lifted from the inclined face x of the wedge E, while the shoe R will adhere by friction to the face of the guide; but the bracket will travel upon the rollers j'' until the wedge and the shoe are free. Preferably the wedge also bears with its incl ine

face x upon rollers $j\,j$, which roll upon the inclined face x^3 of the bracket and normally rest on shoulders o'.

Any suitable devices may be arranged as bearings, whereby the cage can rest upon but without moving the wedges connected with the supporting-cables B B′ until the cage begins to move at undue speed. As shown, the said cables at each side are connected to a cross-bar D, pivoted to an arm extending from the upper end of each wedge, and each wedge is provided with a pivoted pawl H, the end of which bears against a shoulder w at the under side of a collar l upon a shaft G, turning in the brackets K. So long as the pawl is in the position shown in Fig. 3 and the shaft G is prevented from turning the cage cannot descend upon and move the wedges inward.

Normally the shoulders w are at one side of the vertical plane of the axis of the pivot of the pawl H, so that the weight of the cage resting on said pawls at said shoulders tends to turn the shaft. Normally, however, the shaft is prevented from turning by any suitable detent—for instance, a lever M—the inner end of which engages a shoulder w' on the sleeve, holding the latter and the shaft normally in the position shown. When, however, the lever M is shifted from within the cage or otherwise to carry its end from the shoulder w', the upward pressure of the pawl H causes the shaft to turn, and the cage will descend upon the wedges, forcing the latter into contact with the guides. One means of shifting the lever M is by a cable or safety-rope M′, which may be arrested when the cage travels too fast, as in the apparatus patented to C. R. Otis, No. 228,107, May 25, 1880.

To relieve the bite of the wedges after the cage is arrested, the shaft is turned in the direction of its arrow, Fig. 2, thereby forcing down the pawls and wedges.

The shaft is turned by any suitable means, as a lever W. To prevent the lever from being swung automatically when the detent-lever M releases the shaft, which might injure the people in the car, the said lever has a pin 7, Figs. 3 and 4, extending into a slot u in the sleeve l, the slot of such length that when the parts are in the position Fig. 2 and the lever is horizontal the lifting of the lever to a vertical position will bring the pin against the end of the slot and turn the sleeve and shaft in the direction of the arrow, Fig. 2; but the lever can then be turned down to a horizontal position without turning the shaft, the pin being carried from the end of the slot.

In Fig. 5 is illustrated a construction in which below the wedge are adjustable wedge-shoes F F, which bear laterally upon the guide and slide freely thereon, so as to prevent play of the parts and normally maintain the guide central between the parts E R, which should not normally be in contact with the guides. These shoes F may be used with the parts, as shown in Figs. 1 to 6; but preferably they are used with shortened wedges and shoes, as shown in Fig. 5.

In Fig. 6 is illustrated a different arrangement for lifting the cage upon the wedges, where a lever a is pivoted at y to each bracket K and is provided with a slot y' to receive a pin 5, extending from the back of the wedge. At its outer end a pin c extends into a slot y^2 in a link e, connected to an arm f on a shaft g, to which is secured an operating-lever W′. By carrying the lever W′ from the position shown in dotted lines to the position shown in full lines the cage may be lifted on the wedges, which are thereby released from clamping the guides.

While the parts E are referred to as "wedges," this term is used as descriptive of effect rather than of form or construction, because the said parts may be otherwise formed. Thus, as shown in Fig. 7, each wedge E′ may have its bearings against links $q\,q$ and may be kept out of contact with the guide so long as a pawl q' is in line with a shaft G; but when the latter is turned to either side by the lever W′ the pawl will take an inclined position and the weight of the cage will thrust the wedge E′ against the guide.

What is claimed is—

1. The combination with the cage of an elevator and with the suspension-cables thereof, of safety devices connected with said cables and means for supporting the cage upon the safety devices, and means for shifting the supports to bring the weight of the cage into action to operate the safety devices, substantially as described.

2. The combination with guides and wedges and the suspension-cables of an elevator, of a cage movable independently of the wedges, and means for shifting the connections to bring the cage into position to force the wedges against the guides, substantially as set forth.

3. The combination with the cage and guides and suspension-cables of an elevator, of wedges supported by the suspension-cables, bearings maintaining the wedges out of contact with the guides, and means for bringing the weight of the cage upon the wedges to force them against the guides, substantially as set forth.

4. The combination with the cage, guides and suspension-cables of an elevator, of wedges supported by the cables, means for holding the wedges normally out of contact with the guides, and means for bringing the weight of the cage to bear upon the wedges to force the same against the guides, substantially as set forth.

5. An elevator-cage provided with brackets having inclined faces, supporting-ropes, wedges connected to the supporting-ropes and having corresponding inclined faces, and movable supports between the wedges and the cage, substantially as set forth.

6. The combination with an elevator-cage

and its supporting-ropes, of wedges connected to the supporting-ropes, movable bearings for the said wedges, brackets upon the cage having inclined faces corresponding to those of the wedges, and means within the cage for shifting said bearings, substantially as set forth.

7. The combination with the guides, supporting-ropes, and cage of an elevator, of wedges connected with the supporting-ropes, movable bearings for holding said wedges out of contact with the guides, safety-rope and connections arranged to shift said bearings, substantially as set forth.

8. The combination with the cage and guides of an elevator, of supporting-ropes, wedges connected thereto, brackets having inclined faces, rollers interposed between said faces and those of the wedges, and movable bearings for the wedges, substantially as set forth.

9. The combination with the cage, guides, supporting-ropes, and bearings connected to the cage, of wedges connected to the ropes and movable between the guides and bearings, and shoes R movably supported between the guides and bearings, substantially as set forth.

10. The combination of the cage, guides, supporting-ropes, wedges connected to the supporting-ropes, brackets having faces $x' x^3$, movable connections between the wedges and the cage, shoes R, and rollers between the guides and faces x', and between the wedges and faces x^3, substantially as set forth.

11. The combination with the cage, guides, and supporting-ropes of an elevator, of wedges connected with said ropes, a shaft supported by the cage and means for turning it within the cage, and pawls pivoted to the wedges, and bearing upon said shaft, substantially as specified.

12. The combination with the cage, guides, supporting-ropes and wedges connected with the supporting-ropes, of the guide-shoes F F, substantially as set forth.

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

MARY E. BALDWIN,
Executrix of the last will and testament of Cyrus W. Baldwin, deceased.

Witnesses:
W. D. BALDWIN,
W. H. BRADY.