

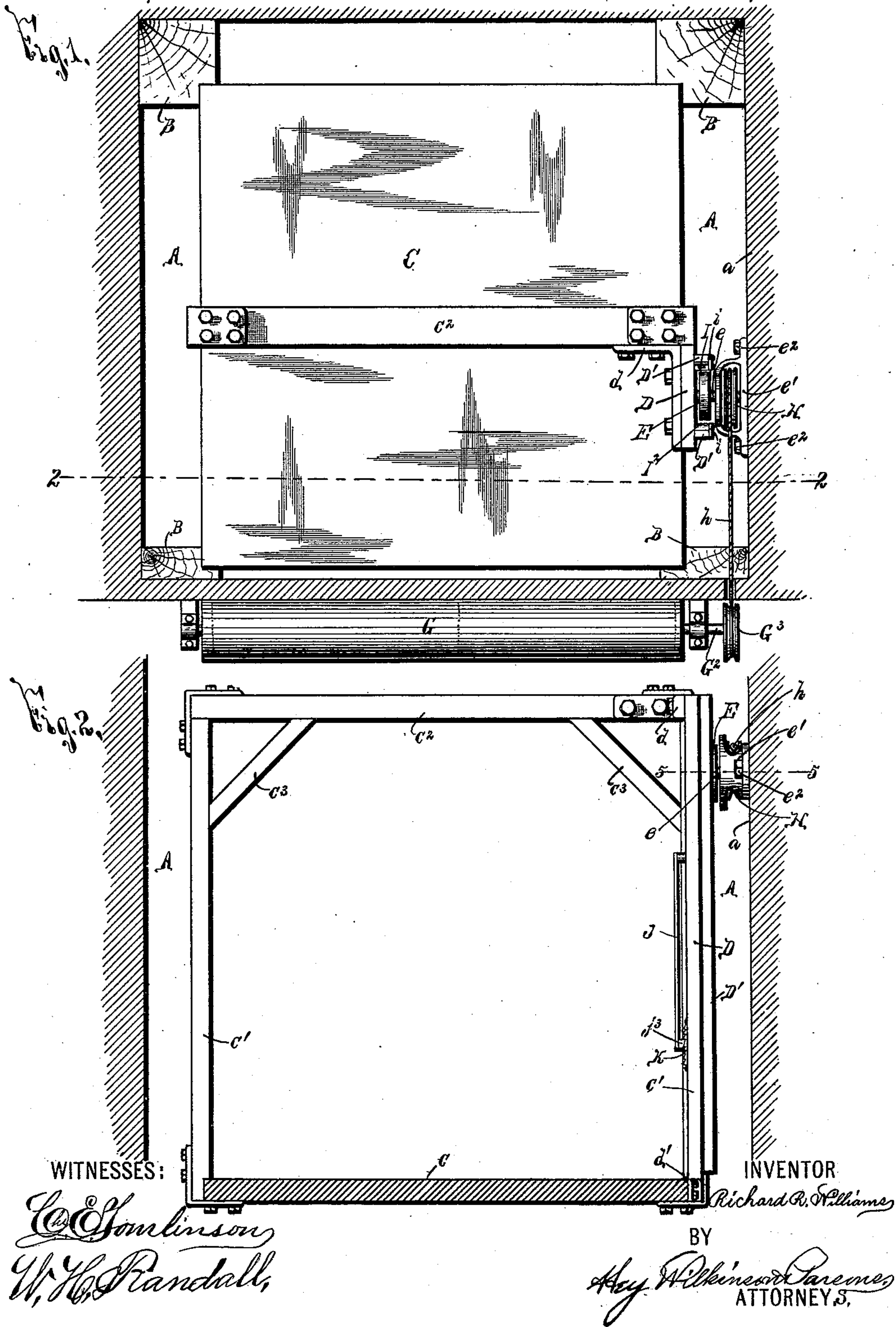
(No Model.)

3 Sheets—Sheet 1.

R. R. WILLIAMS.
ELEVATOR.

No. 465,229.

Patented Dec. 15, 1891.



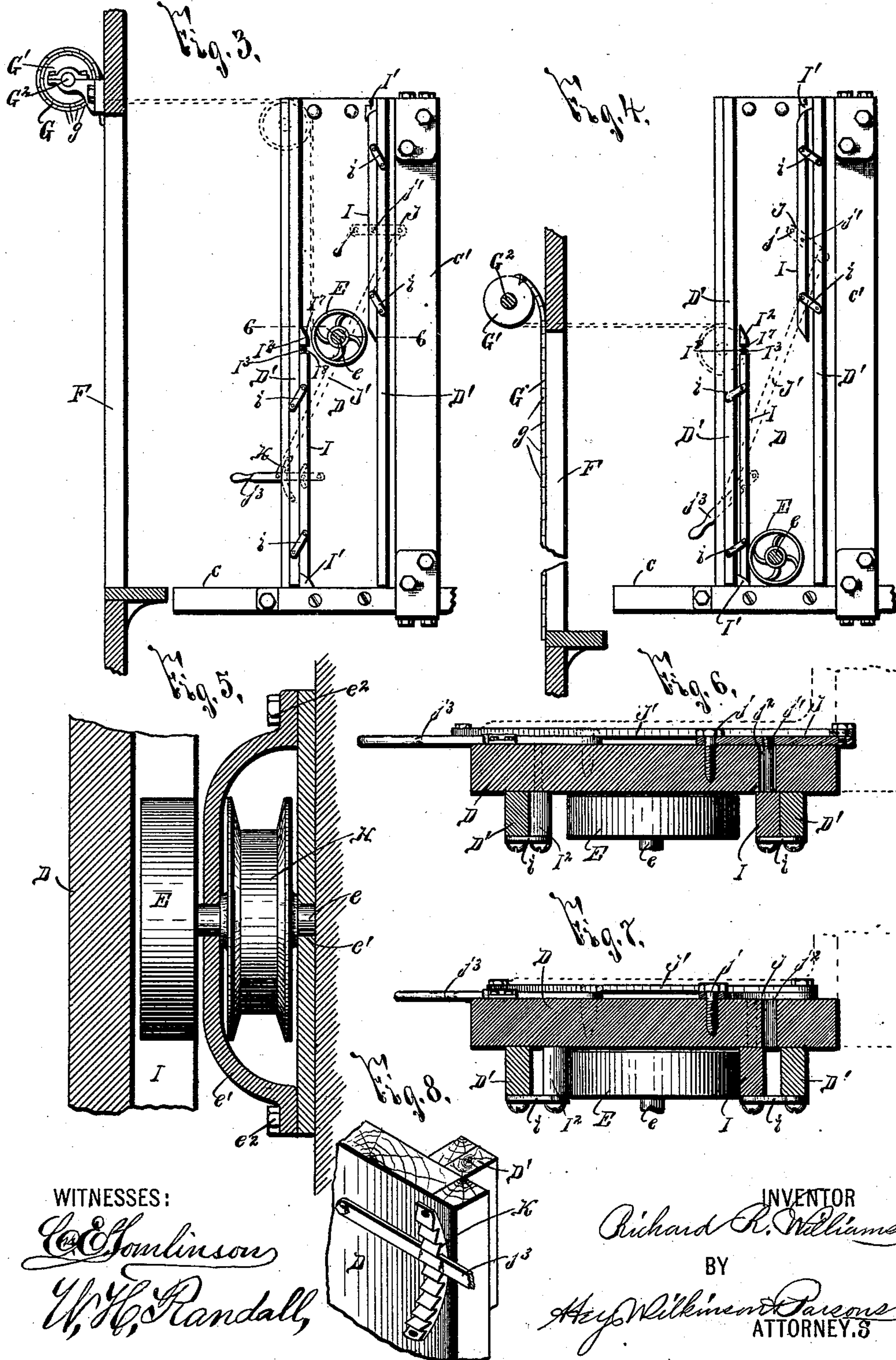
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WITNESSES:

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W. H. Randall

INVENTOR

Richard R. Williams

BY

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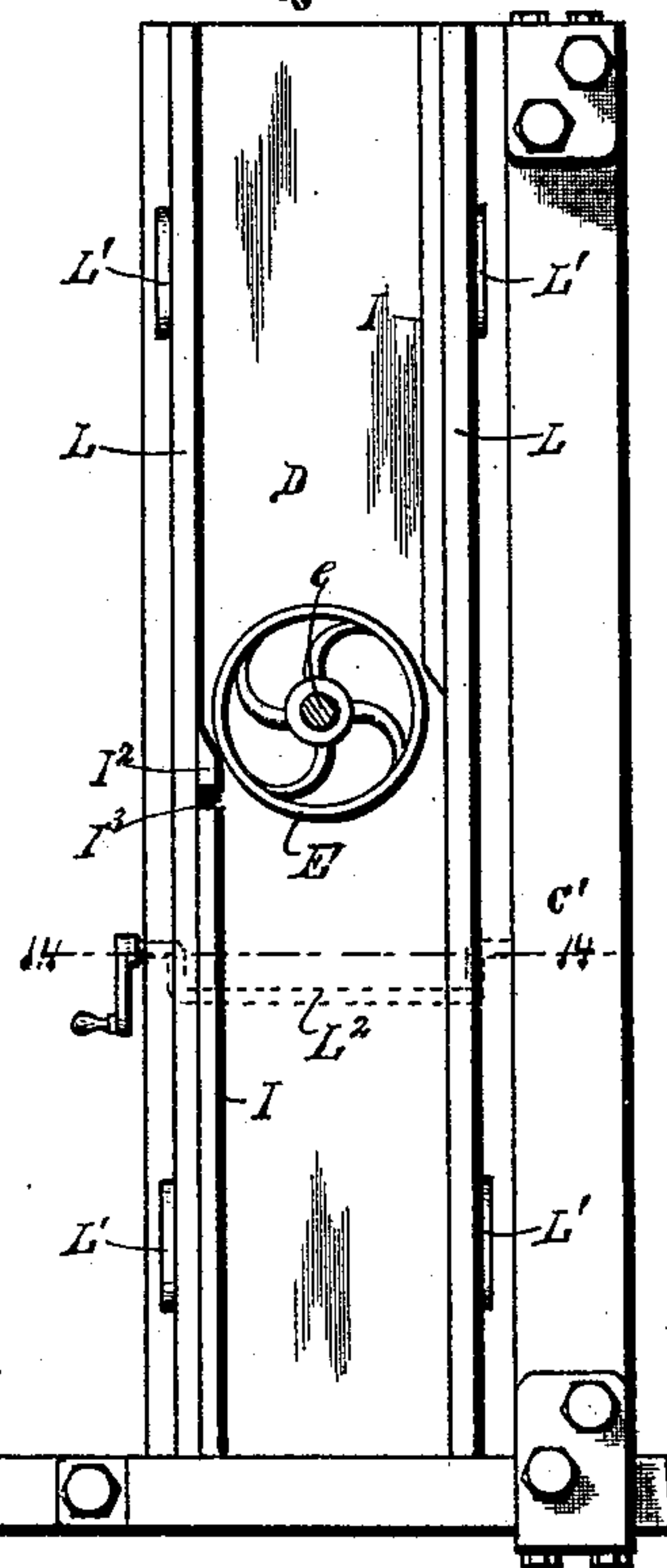
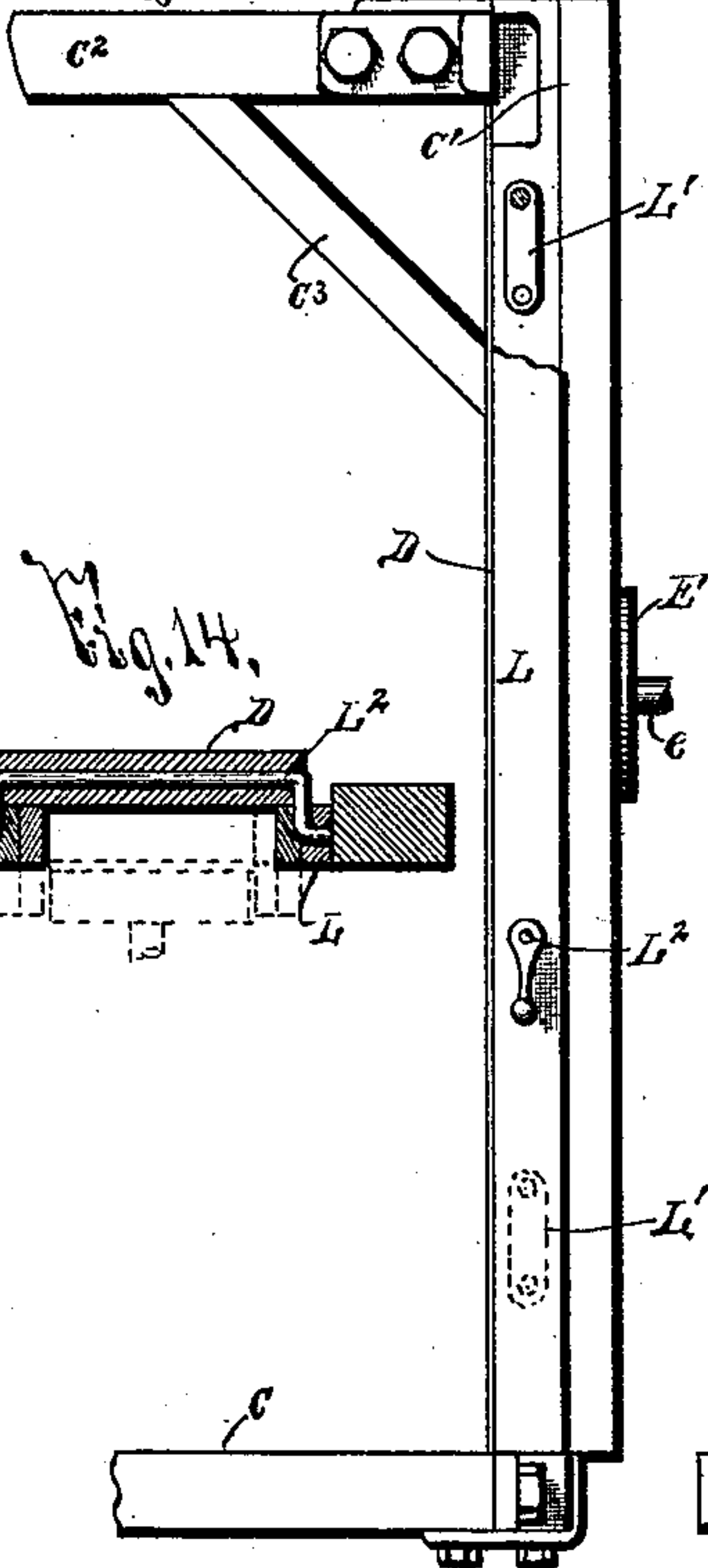
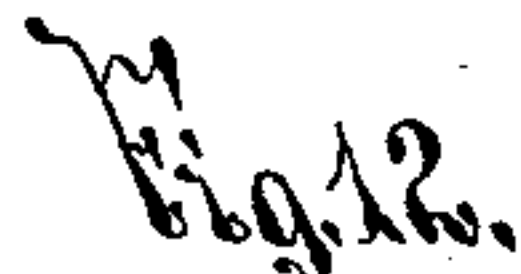
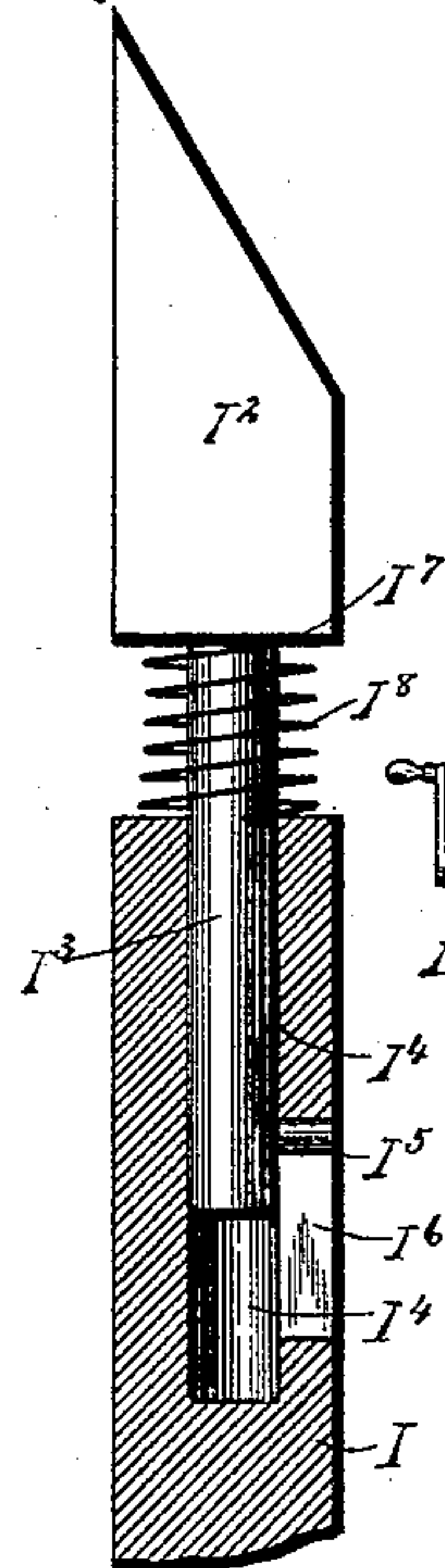
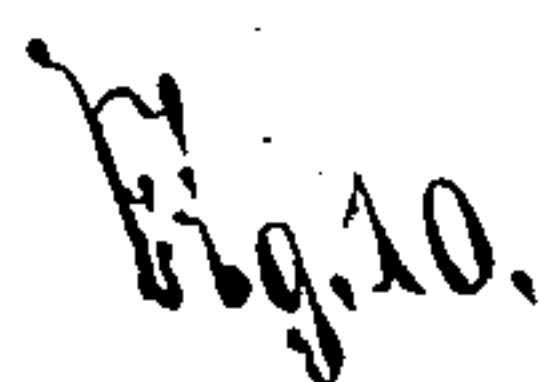
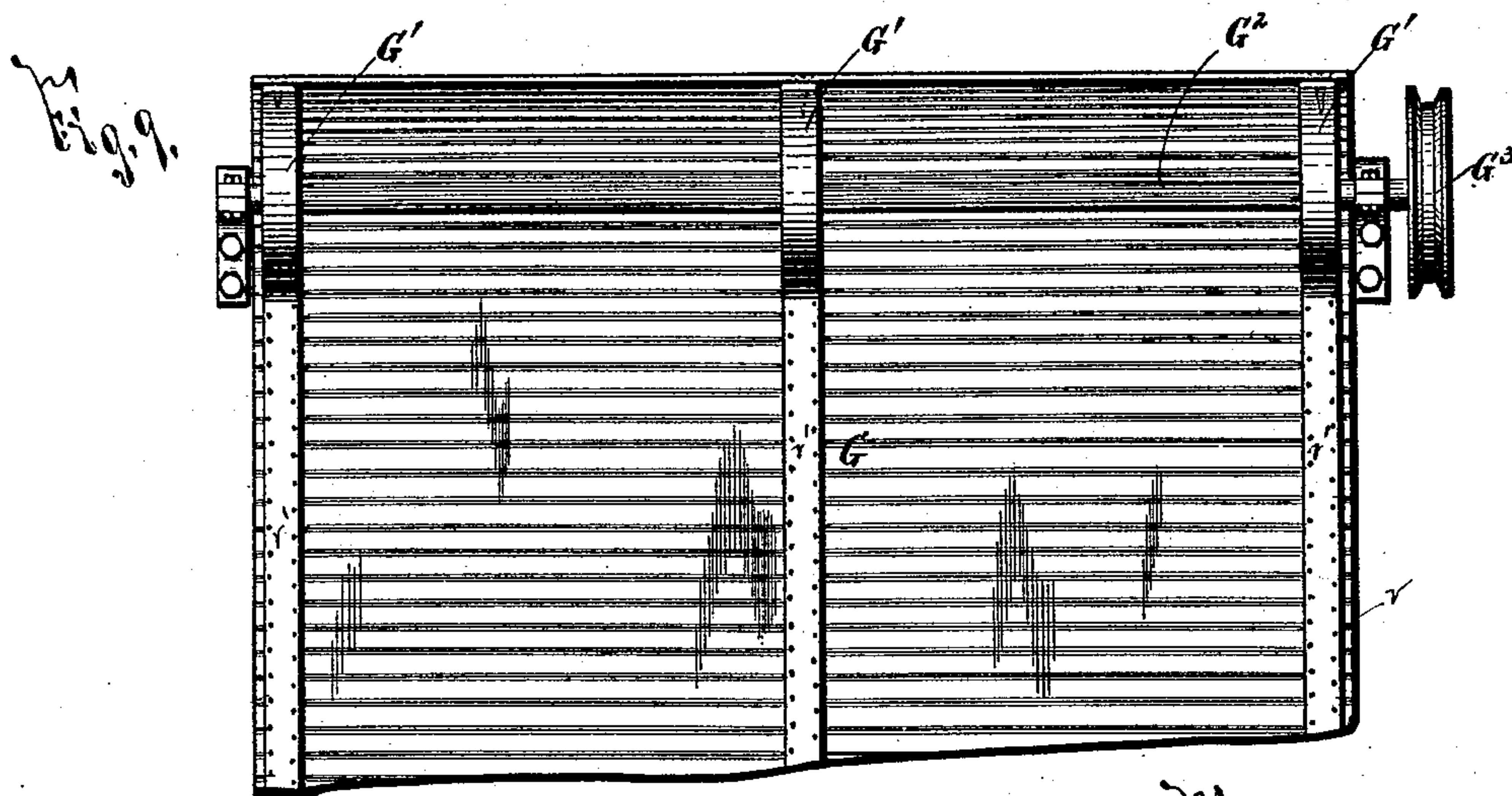
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3 Sheets—Sheet 3.

R. R. WILLIAMS.
ELEVATOR.

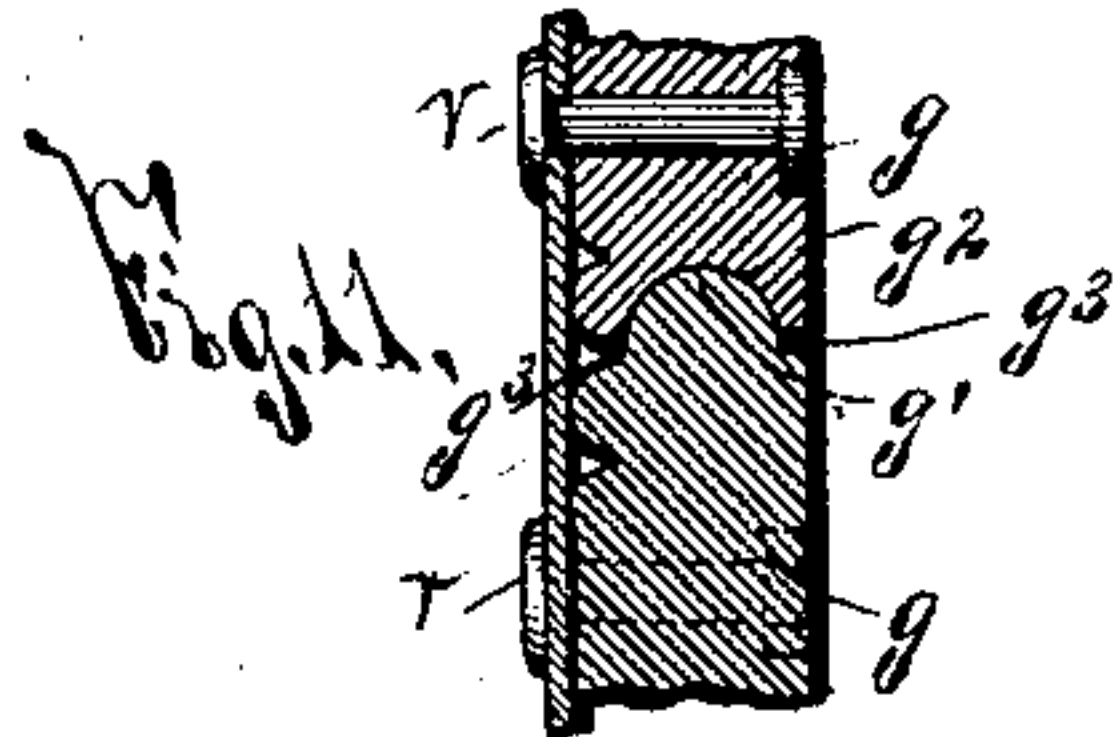
No. 465,229.

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RICHARD R. WILLIAMS, OF SYRACUSE, NEW YORK.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 465,229, dated December 15, 1891.

Application filed March 4, 1891. Serial No. 383,783. (No model.)

To all whom it may concern:

Be it known that I, RICHARD R. WILLIAMS, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Elevators, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in elevators, and has for its object the production of a strong, automatic, and simple device that may be readily mounted in operative position and is efficient in operation and durable and convenient in use; and to this end the invention consists, essentially, in an elevator-door, an actuating-wheel, connections between the wheel and door, whereby the movement of the former opens and closes the latter, and bearing faces or bars on the elevator-car, movable toward and away from the wheel and adapted to engage opposite points on its periphery for rotating the same reversely.

The invention furthermore consists in a hinged support for the faces, a connection between said faces for operating both simultaneously, and in the detail construction and arrangement of the parts, all as hereinafter more particularly described, and pointed out in the claims.

In describing this invention reference is had to the accompanying drawings, forming a part of this specification, in which like letters indicate corresponding parts in all the views.

Figure 1 represents a transverse sectional view of an elevator-well having my invention shown in operative position. Fig. 2 is a vertical sectional view taken on line 2 2, Fig. 1. Fig. 3 is a detail elevation representing a portion of the elevator-well and elevator-car, showing the elevator-door as open and its actuating-wheel and the bearing-faces on the elevator-car as in their position assumed when the door is open. Fig. 4 is a similar view to Fig. 3, illustrating the elevator-door as closed. Fig. 5 is a transverse sectional view taken on line 5 5, Fig. 2. Fig. 6 is a transverse sectional view taken on line 6 6, Fig. 3, illustrating the actuating-faces secured to the elevator-car as in their inoperative position. Fig. 7 is a similar sectional view illustrating the actuating-faces on the elevator-car as in operative engagement with the wheel for opening and

closing the door. Fig. 8 is a detail view of the catch for holding the ways in their adjusted position. Fig. 9 is an elevation of a portion of the elevator-door and the drum upon which it is wound. Fig. 10 is a detail view, partly in section, representing a yielding extremity provided upon one end of one of the bearing-faces. Fig. 11 is a detail view illustrating the adjacent edges of two of the slats composing my elevator-door. Figs. 12 and 13 are respectively edge and face views of a modified construction of my invention; and Fig. 14 is a sectional view taken on line 14 14, Fig. 13.

A represents the elevator-well, having suitable guides B, and C the elevator-car, all of which parts may be of any desirable form, size, and construction. The elevator-car illustrated consists of the floor c , central uprights c' , and the cross or tie bar c^2 , suitably braced with the uprights by bars c^3 .

D represents an upright plank firmly secured along the side edge of one of the uprights c' , being held at its upper extremity by the angle-brace d , having one arm secured to said plank and the other arm to the tie-bar c^2 , and at its lower extremity by the socket or other desirable fastening means d' .

Projecting from one side a of the well A, with its face in close proximity to the plank D, is an actuating-wheel E, which is mounted on a spindle e , journaled in a suitable bearing e' , secured by bolts e^2 to the side of the well, and is provided with a yielding peripheral face.

F represents the doorway, and G the door for opening and closing said way. As preferably constructed the door consists of a series of slats g , secured by rivets r to belts g' and having on their adjacent edges tongues g' and grooves g^2 of a curved cross-section. On either or both sides of said tongues or grooves are shoulders g^3 , adapted to firmly support the slats when the door is closed. The upper extremity of the door G is, as best shown at Fig. 9, firmly secured to a drum G' , composed of a series of smooth-faced sections journaled on a rod G^2 , upon one end of which is a pulley G^3 or drum. Upon the spindle e and preferably within the hollow bracket e' is a drum H, and secured at one end to said drum H and at the other to the

pulley or drum G^3 is a cord h for rotating the drum G' and opening or closing the door as the wheel E is rotated in reverse directions.

Secured to the plank D and oppositely arranged with each other are bearing faces or bars I , having the lower end of one in substantially the same plane as the upper extremity of the other and having the upper extremity of one and the lower extremity of the other supported from lengthwise movement by the stationary supports I' . Pivoted at one extremity to the faces I and at the other to a raised rib D' on the plank D are links i , arranged at the opposite extremities of each bearing-face for moving the same uniformly toward and away from the actuating-wheel E .

J represents levers having one extremity pivoted at j to the inner face of the plank D and the other pivoted to a link or connection J' . Projecting from the levers J are pins or lugs j' , movable in curved slots j^2 in the plank D , with their opposite extremities secured to the bearing-faces, whereby upon the movement of said levers the bearing-faces are forced toward and away from each other, in which movement the faces are held perpendicular by means of the links i . To facilitate this movement of the bearing-faces, one of the levers J , and preferably the lower one, is provided with a hand-engaging portion j^3 . This lower lever is securely held in its adjusted position by a catch K , which preferably consists of a curved rack having ratchet-shaped teeth with which the edge of the lever J engages.

At Fig. 3 the elevator-car is shown as having moved upward until the upper bearing-face has entirely passed the actuating-wheel E , and the door is illustrated as open, having been wound upon the drum G' by the engagement of the upper bearing-face I with said actuating-wheel. As the elevator-car continues its upward movement the lower actuating-face engages at the opposite side of the periphery of the actuating-wheel and reversely rotates the same, thus reversely rotating the drum G' and closing the door, as shown at Fig. 4.

Should the operator not desire to vary the position of any of the doors as the elevator-car moves onward, it is merely necessary to force the hand-engaging portion j^3 of the lever J upward, whereupon the bearing-faces I are withdrawn from operative position and fail to engage the actuating-wheel E .

To prevent too sudden a return movement of the door should the elevator-car move rapidly and continue its upward movement beyond a door, I provide one of the engaging faces I with a yielding-mounted extremity I^2 , having an inclined front end and a projecting spindle I^3 at its rear end. This spindle is guided in a socket I^4 , and is formed with a stop I^5 , movable in a slot I^6 in said face, and interposed between the top of the

face and a shoulder I^7 on said extremity is a spring I^8 , which constantly forces said extremity outward and permits the same to yield slightly upon contact with the actuating-wheel.

At Figs. 12, 13, and 14 I have shown a slightly-modified form of my invention, in which the plank D is movably mounted between two stationary uprights L , being connected thereto by links L' , and forced toward and away from the wheel E by means of a crank-shaft L^2 .

The operation of my invention will be readily perceived from the foregoing description and upon reference to the drawings.

The parts of my invention are neither intricate nor fragile, but are simple, large, and strong, and are evidently efficient in use.

As the elevator-car moves up or down, the door may be either opened or passed without changing its position, as is desired. A minimum amount of room is required for the opening door, and there is absolutely no liability for persons to enter the elevator-well. Moreover, my invention may be readily applied to any elevator-car at a minimum cost of expense and requires absolutely no change in the construction either of said car or of the well, it being merely necessary to attach the door-carrying drum at the upper part of the doorway, secure the actuating-wheel and its bracket to the side of the well, and bolt the plank D to the ordinary upright of the elevator-car.

Instead of a flexible folding door, a swinging or horizontally or vertically reciprocating door may be opened by the wheel E through the medium of suitable connections not necessary to herein illustrate or describe, but familiar to any mechanic skilled in the art. It is evident, however, that the detail construction and arrangement of the parts of my invention may be somewhat changed from that shown and described without departing from the spirit thereof.

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

1. In an elevator, the combination, with an elevator-door, a wheel, and connections, substantially as described, between the door and wheel for opening and closing the door, of an elevator-car, a stationary support D on the car, movable ways on said support, and links hinged to the support and to the ways for moving the ways uniformly toward and away from said wheel, substantially as and for the purpose set forth.

2. In an elevator, the combination, with an elevator-door, a wheel, and connections, substantially as described, between the door and wheel for opening and closing the door, of an elevator-car, a stationary support D on the car, movable ways on said support, links hinged to the support and to the ways for moving the ways uniformly toward and away

from said wheel, and an end support I' at the extremity of one of said ways, substantially as and for the purpose described.

3. The combination of an elevator-door, a wheel, and connections between the door and wheel for raising and lowering the door by the movement of the wheel with an elevator-car, oppositely-arranged bearing-faces adapted to engage opposite faces of the wheel, a movable extremity on one of said faces, and a connection between said faces for forcing them toward and away from each other, substantially as set forth.

4. In combination, an elevator-car, oppositely-arranged bearing-faces on the elevator-car, a yielding extremity on one of said faces, an elevator-door, and connections, substantially as described, between the door and faces, substantially as specified.

5. In an elevator, the combination, with an elevator-door, a wheel, and connections, substantially as described, between the door and wheel for opening and closing the door, of an elevator-car, a stationary support D on the car, movable ways on said support, links hinged to the support and to the ways for moving the ways uniformly toward and away from said wheel, and a yielding extremity on one of said ways, substantially as and for the purpose set forth.

6. In an elevator, the combination, with an elevator-door, a wheel, and connections, substantially as described, between the door and the wheel for opening the door, of an elevator-car, a stationary support D on the car, a movable way on said support for bearing against the wheel and revolving the same to open the door, links between the support and way, and the lever for forcing said way toward and away from the wheel, substantially as and for the purpose specified.

7. In an elevator, the combination, with an elevator-door, a wheel, and connections, sub-

stantially as described, between the door and wheel for opening the door, of an elevator-car, a stationary support D on the car, movable ways on said support, links hinged to the support and to the ways, a lever for forcing one way toward and away from the wheel, and a link between said lever and the opposite way for forcing the latter way against the wheel, substantially as and for the purpose described.

8. In an elevator, the combination, with an elevator-door, a wheel, and connections, substantially as described, between the door and the wheel for opening the door, of an elevator-car, a stationary support D on the car, a movable way on said support for bearing against the wheel and revolving the same to open the door, links between the support and way, the lever for forcing said way toward and away from the wheel, and a catch for holding said lever in its adjusted position, substantially as set forth.

9. In an elevator, the combination, with an elevator-door, a wheel, and connections, substantially as described, between the door and wheel for opening the door, of an elevator-car, a stationary support D on the car, movable ways on said support, links hinged to the support and to the ways, a lever for forcing one way toward and away from the wheel, a link between said lever and the opposite way for forcing the latter way against the wheel, and a catch for holding said lever in its adjusted position, substantially as described.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 20th day of February, 1891.

RICHARD R. WILLIAMS.

Witnesses:

CLARK H. NORTON,
L. M. BAXTER.