

No. 735,306.

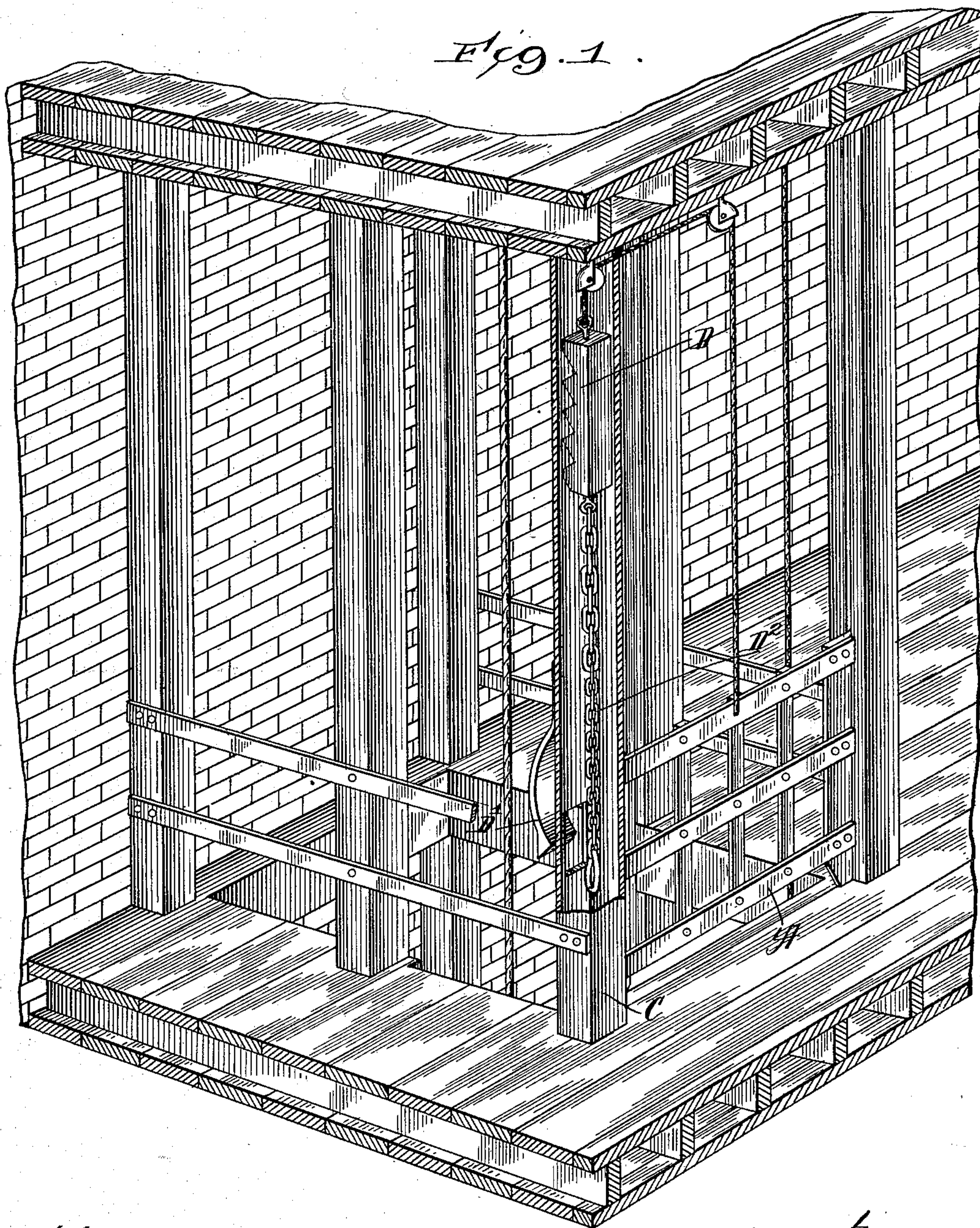
PATENTED AUG. 4, 1903.

C. E. SIMPSON.
SAFETY GATE.

APPLICATION FILED MAR. 18, 1901.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:

Ray White.

Harry B. White

Inventor:

Charles E. Simpson.

By Charles W. Mills Attorney

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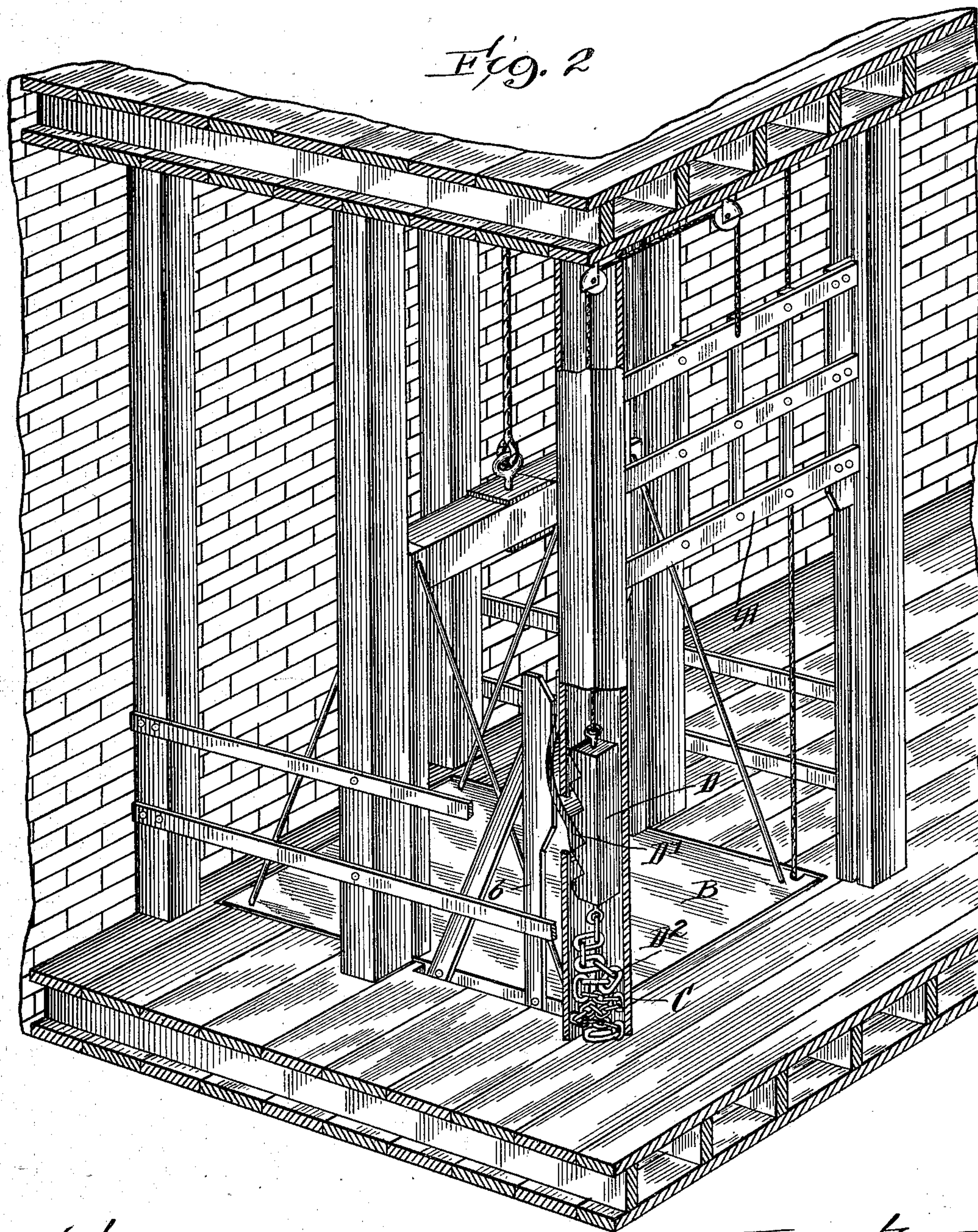
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Ray White

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Charles E. Simpson

By Charles S. Horney

UNITED STATES PATENT OFFICE.

CHARLES E. SIMPSON, OF CHICAGO, ILLINOIS.

SAFETY-GATE.

SPECIFICATION forming part of Letters Patent No. 735,306, dated August 4, 1903.

Application filed March 18, 1901. Serial No. 51,640. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. SIMPSON, a citizen of the United States, and a resident of Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Safety-Gates; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in safety-gates, and more particularly to an automatic-operating safety-gate for elevators or the like, designed to be automatically held in its open position by the elevator-car and to be self-closing when the car passes above or below the same.

The invention consists of the matters hereinafter described, and more fully pointed out and defined in the appended claims.

In the drawings, Figure 1 is a perspective view of an elevator-shaft protected by a gate embodying my invention and showing the gate closed. Fig. 2 is a similar view and shows the gate supported in its open position.

In said drawings, A indicates the gate, which may obviously be of any desired size, material, or construction and adapted to slide upwardly, as shown, to permit access to or egress from the elevator-car B.

C indicates a tubular casing, as shown rectangular in cross-section and serving as one of the posts at a front corner of the elevator-shaft. Within said casing is supported the weight D, provided with a plurality of notches on its inner side or that adjacent to the car and adapted to be engaged by a spring-dog D' through an opening in the casing provided for that purpose. Said spring-dog is rigidly secured at one end on the side of said casing adjacent to the shaft and is provided intermediate of its ends with an outwardly-curved portion adapted to be engaged by a post or member b, rigidly secured on the elevator-car. Said member is shaped on its side adjacent thereto to engage said dog and push the free end of the same inwardly into engagement with the weight when the car is at a level with the floor where the gate is to be operated. The engaging face of said post or member b is cut away above and below a cen-

tral curved portion corresponding with the outer surface of said dog and as a whole forms a cam. From said weight D, as shown, a line or other flexible connection leads upwardly and laterally through sheaves of any desired kind, one of which is in the top of said casing, the other of which is above the middle of the gate and is secured centrally at the top of the gate, so that downward strain on the gate or on that end of the line serves to elevate the weight. Said gate is materially heavier than the weight D and acts to close automatically when the dog D' is released from said weight.

For the purpose of more perfectly controlling the movement of the gate a chain D² is secured to the lower end of the weight D. The upper links of said chain, as shown, are relatively large as compared with the links near the lower end thereof. At the lower extremity of the chain a large link or weight of any desired form may be used, if preferred. As shown, a large link is used. The length of said chain is such that when the gate is down to its lowest or closed position and the weight D elevated, as shown in Fig. 1, said chain is wholly suspended therefrom. When, however, the weight is in position for engagement with the spring-dog and the gate elevated, as shown in Fig. 2, the weight of said chain is almost entirely removed from the weight D, said chain being coiled at the bottom of said casing.

The operation of my device is as follows: The elevator-shaft being equipped as before described, the operator as the car approaches the floor at which it is desired to stop seizes the gate and throws the same upwardly. The same being very nearly balanced by the weight D and the chain D², moves very easily. As the gate ascends the weight and chain descend to the position indicated in Fig. 2. The cam b now engages the dog D', forcing the same inwardly into engagement with a tooth on said weight, thereby locking the gate in its supported position at a sufficient height to permit the free use of the elevator-car. Practically the entire gravity of the chain in this position is supported on the floor. Inasmuch as the gate is heavier than the weight D, the moment the car moves either up or down sufficiently to disengage the cam

member from the spring-dog the gate starts rapidly downward to its closed position. The upper links of the chain, as shown, are comparatively large, decreasing in size toward the lower end and gradually increase the resistance to the fall of the gate during the first part of the fall of the gate and until the gate is very nearly closed. The larger link or weight is then lifted, and the entire length of the chain is supported on the gate, thus checking the fall of the gate quickly at the lower limit of its movement and permitting it to close softly, the effect being to give a rapid downward movement until the gate is nearly closed, then suddenly checking the same by the added weight at the lower end of the chain. The weight D, the chain, and the large link or weight at the lower end of the same are very nearly as heavy as the gate, so while the gate closes very quickly it closes gently and remains in its closed position until positively actuated by the operator.

Obviously my invention may be embodied with any desired form of car or cage, and the cam member may assume any desired form. So, too, the spring-dog may be differently shaped, if preferred, and many of the details of construction may be varied without departing from the principle of this invention.

I claim as my invention—

1. In a device of the class described the combination with a sliding gate or door, of a variable counterweight secured thereto and acting to gradually increase resistance to the closure of the gate, said counterweight being supported wholly by said gate or door when in its closed position and partly thereby when in the open position, and a spring-detent acting to positively lock the gate or door in its open position

2. In a device of the class described, the combination with a sliding gate, of a variable counterweight embracing a notched weight having a chain depending therefrom, flexible connections between the gate and notched weight, sheaves disposed to support said counterweight wholly by said gate when the gate is in its closed position and partly thereby when in its open position, and a spring-detent acting to engage in the notches in said

weight and positively lock the gate in its open position.

3. In a device of the class described, the combination with a movable gate, of a variable counterweight supported thereby and acting to gradually increase resistance to the closure of the gate, said counterweight comprising a toothed weight depending from the gate and a chain of variable links supported wholly by the gate when open and partly therefrom when closed and a spring-detent acting to engage the teeth of the weight.

4. In a device of the class described the combination with a movable door, of a detent, a counterweight comprising a mass having teeth or projections on one side thereof adapted to be engaged by said detent, a chain attached to the lower end thereof and forming a part of the counterweight, said chain comprising links larger at one end of the chain than at the other and a large link or weight on the lower end thereof.

5. In a safety-gate for elevators, the combination with the elevator-shaft and the car, of an upwardly-sliding gate, a casing at one side of the same adjacent to the elevator-shaft, sheaves located above said gate and in the casing, a line secured to the gate passing through said sheaves and into the casing, a weight supported on the line and having teeth on its inner side adjacent to the shaft, a plurality of connected counterweights of varying sizes depending from said weight, a spring-dog rigidly secured on the casing adjacent to the shaft and adapted to be forced inwardly of the casing into engagement with the teeth on the weight, and a cam rigidly secured on the car acting to force said dog inwardly into locking engagement with the teeth of said weight when the car is at a level with the floor, thereby acting to hold the gate in an elevated position.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

CHARLES E. SIMPSON.

In presence of—

C. W. HILLS,
ANNA B. HILLS.