

(No Model.)

2 Sheets—Sheet 1.

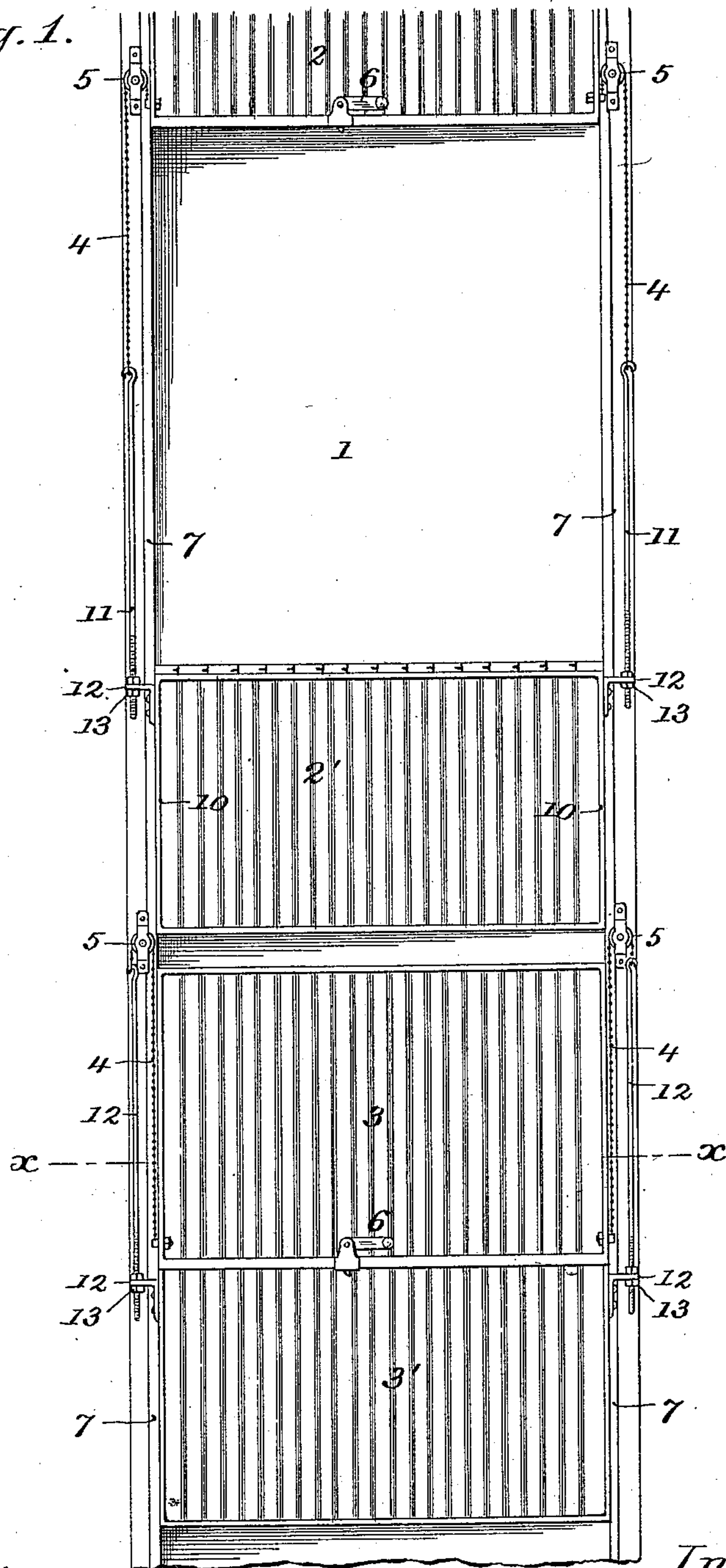
W. A. CROSS.

SLIDING DOOR FOR INCLOSED HATCHWAYS.

No. 560,396.

Patented May 19, 1896.

Fig. 1.



Attest:

H. A. Nott

James Lavallie

Inventor:

William A. Cross,

by

Robert Burns Atty.

(No Model.)

2 Sheets—Sheet 2.

W. A. CROSS.
SLIDING DOOR FOR INCLOSED HATCHWAYS.

No. 560,396.

Patented May 19, 1896.

Fig. 2.

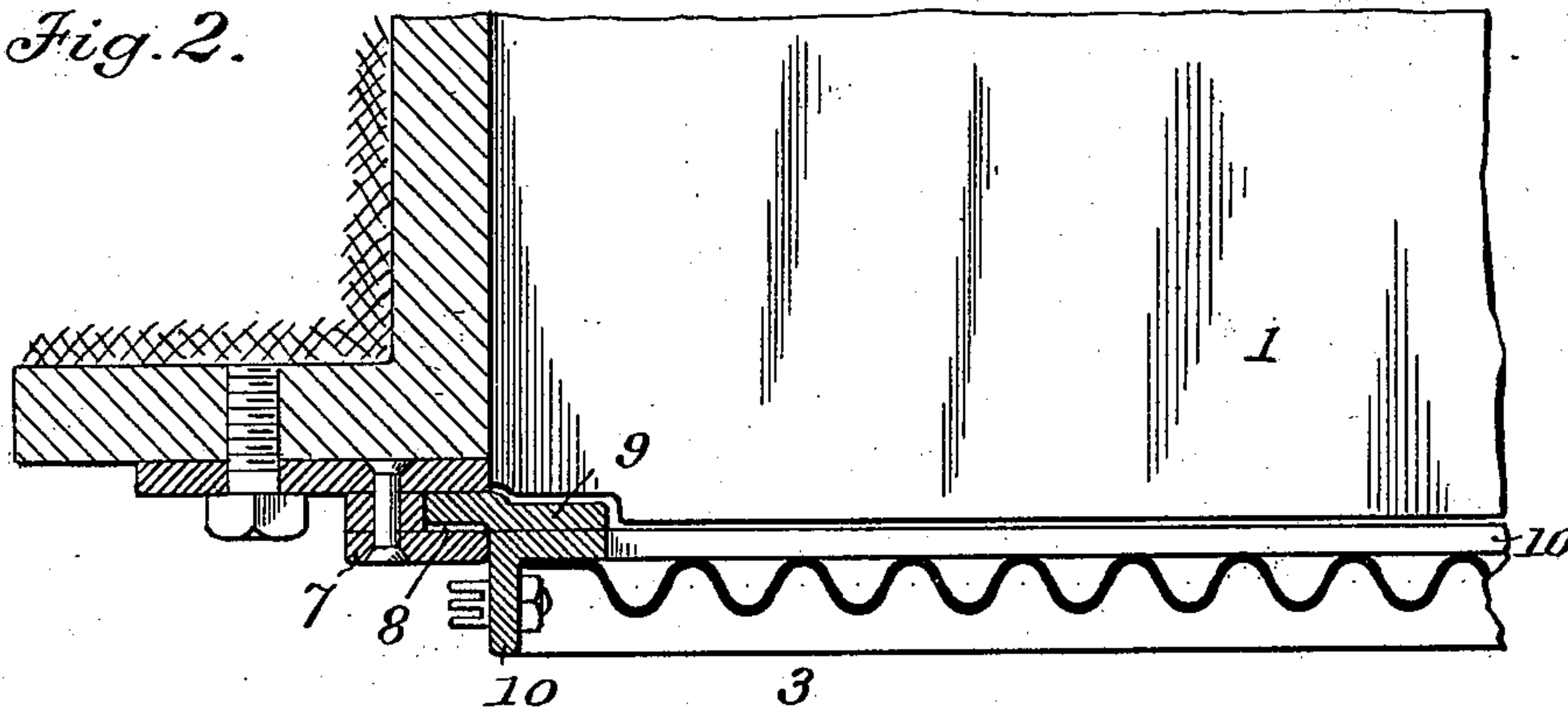


Fig. 3.

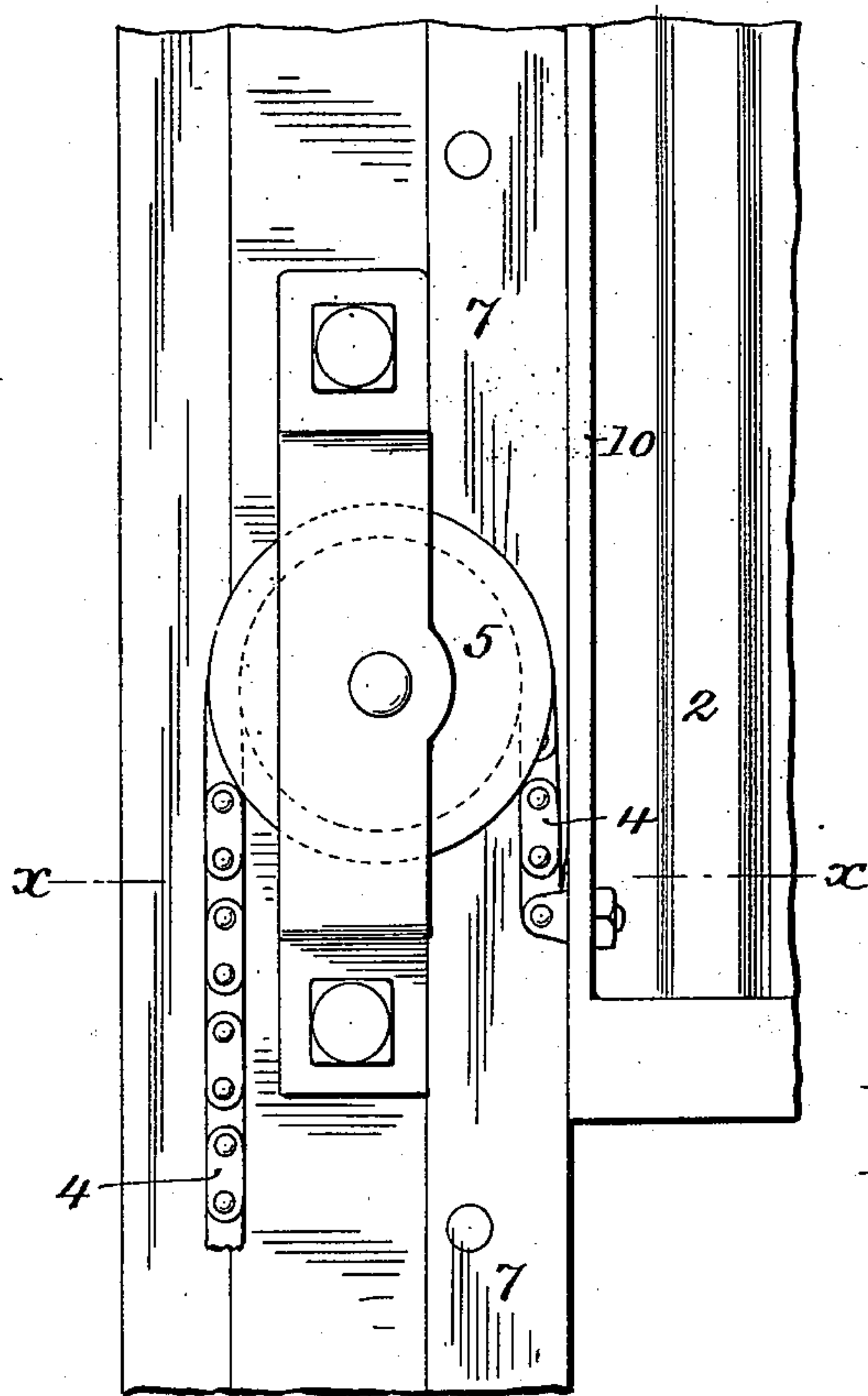
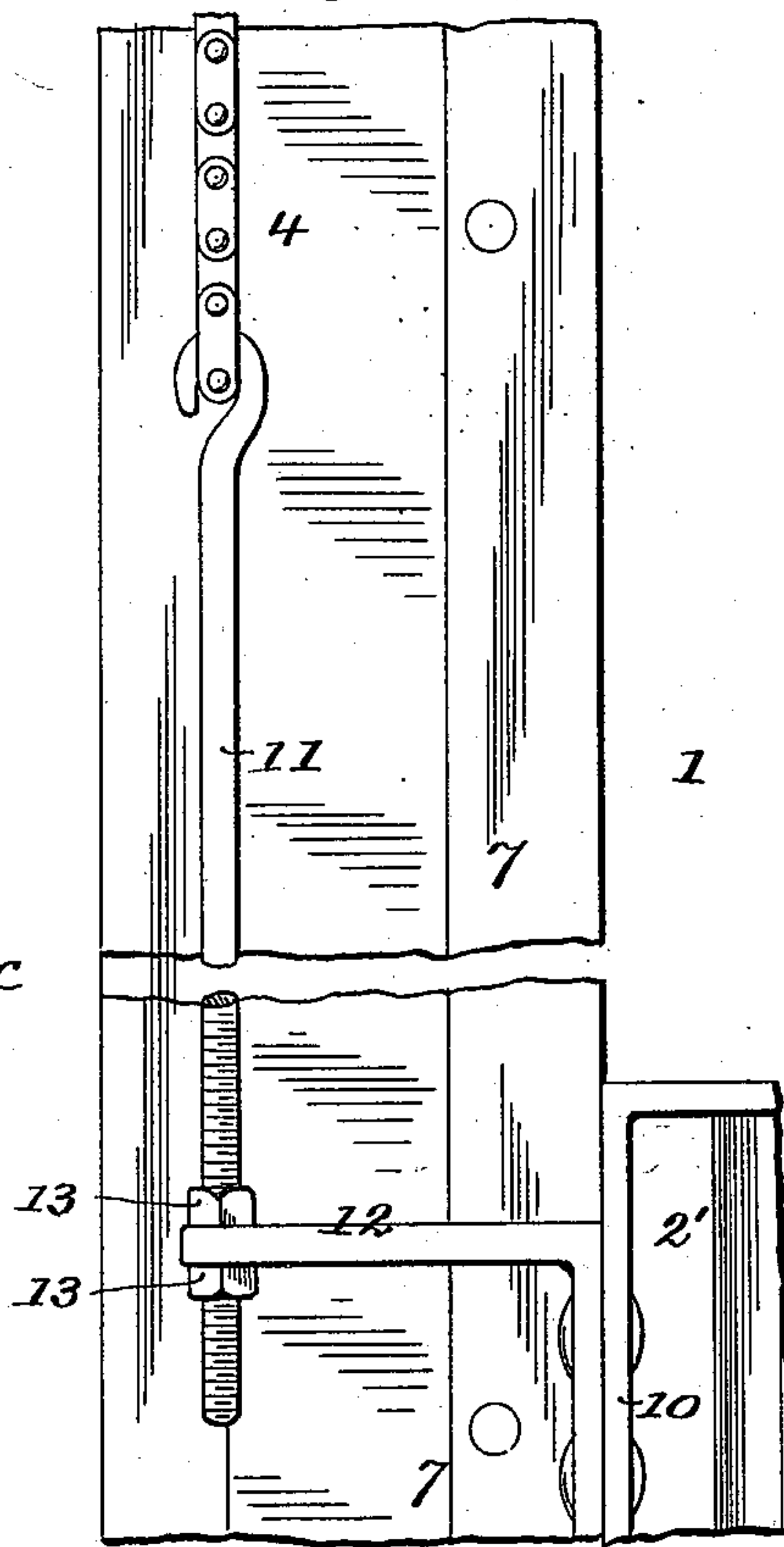


Fig. 4.



Attest:

W. A. Nott

James Cavallini

Inventor:

William A. Cross,

by Robert Burns Att'y.

UNITED STATES PATENT OFFICE.

WILLIAM A. CROSS, OF CHICAGO, ILLINOIS.

SLIDING DOOR FOR INCLOSED HATCHWAYS.

SPECIFICATION forming part of Letters Patent No. 560,396, dated May 19, 1896.

Application filed January 23, 1896. Serial No. 576,531. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. CROSS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sliding Doors for Inclosed Hatchways; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

The present invention relates to that type of sliding doors for the doorways of elevator-shafts and the like in which such doors are made in halves that are adapted to move toward and away from each other in a vertical plane in effecting an opening or closing of such doorway; and the present improvement has for its object to provide a simple, durable, and effective construction and arrangement of such doors and their related parts, whereby a very compact arrangement is provided, requiring but little lateral space within the elevator shaft or hatchway, and with which the opening of one set of doors will insure a closed condition of the pairs of doors next adjacent and above and below the same, and so prevent the open condition of such last-mentioned doors either by accident or intent, as will hereinafter more fully appear, and be more particularly pointed out in the claim. I attain such object by the construction and arrangement of parts illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of two pairs of safety-doors, showing the relative position of the doors in their open and closed condition, the upper set of doors being shown in an open condition, while the lower set is shown in a closed condition. Fig. 2 is an enlarged detail horizontal section at line *x x*, Figs. 1 and 3; Fig. 3, an enlarged detail elevation illustrating the pulley and chain connection of the sliding doors; Fig. 4, a similar view illustrating the means for effecting an adjustment of the relative position of the sliding doors.

Similar numerals of reference indicate like parts in the several views.

As represented in the drawings, each doorway 1 of the elevator hatchway or shaft is closed by a pair of sliding-door halves or sections 2 2' 3 3', &c., that are arranged to slide

vertically and in opposite directions in slides that have a vertical arrangement in the elevator shaft or hatchway, and are located at each side of the doorways 1, as shown. Each pair of door halves or sections 2 2' or 3 3' will have a combined length a little greater than a doorway 1, so as to effectually close the same, and are connected together at each end by means of chains 4, or other like flexible connections, that pass around sheaves 5, secured to the sides of the hatchway-walls, so that the different pair of door halves or sections will move in opposite directions in an opening or closing movement of the same, the one moving upward while the other moves downward, and vice versa, and being usually made of an equal weight the door halves or sections will counterbalance each other, so that but very little force will be required to open or close the same.

6 are locking-latches located upon one of the door halves or sections and adapted to engage the other one of said door halves or sections, such latches being arranged upon the hatchway side of the doors, so that the latches can only be operated from the elevator-platform as it reaches said doors. An opening of such doors from the room side thereof is thus prevented, and the danger of accidents due to the opening of the doors when the elevator is not at the landing is entirely avoided.

In the present improvement the guide-slides 7 are of a continuous nature and extend from the lowermost to the uppermost of the series of doorways to which the improvement is applied, each slide consisting of a composite or other type of grooved guide-bar that is bolted to the side wall of the hatchway with the face containing the guide-groove 8 projecting toward the counterpart slide at the opposite side of the doorway. The grooves 8 are adapted to receive the vertical guide plates or strips 9, that are secured to the sliding-door sections, so as to guide said doors and confine the same to a vertical movement. With this construction the whole series of vertically-sliding doors are in vertical alinement, so that but very little space transversely is taken up within the elevator hatchway or shaft, and what is of greater moment the opening of one pair of doors at any particular doorway will insure

the closing of the next adjacent door above or below the same that may have been left open accidentally, as with the present construction one pair of doors cannot be fully
5 opened without the next adjacent upper and lower pair of doors be in a closed condition. The door sections or halves 2 2' 3 3', &c., will be of the usual construction, having a marginal rim or frame 10, of angle-iron, and a
10 center of corrugated metal, as shown.

The sheaves 5 will usually be secured to the face of the slides 7, as shown, and the chain connections 4 will be attached at one end to the lower ends of the upper door sections or halves
15 2 3, &c., while the other end of such chain connections will be adjustably attached to the upper ends of the lower door sections or halves 2' 3', &c., by means of the vertically-arranged connecting-rods 11, side brackets 12,
20 and adjusting-nuts 13, as shown in Figs. 1 and 2. This improved arrangement of the chain connections, sheaves, &c., not only admits of a ready and convenient adjustment of the sliding doors with relation to their re-
25 spective doorways, but which also admits of a very compact vertical arrangement of the parts, so that the vertical alinement of the

series of sliding doors, as heretofore described, can be attained without unnecessary complications.

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

The combination with the hatchway of a building provided with a vertical series of
35 doorways, a pair of vertically-extending guide-slides arranged at the sides of the different doorways, and having a continuous nature, and a series of sliding doors for the different doorways, each door consisting of op-
40 positely-moving upper and lower sections, that are connected together so as to counter-balance, the whole series of doors moving in alinement, and so arranged that the opening
45 of any one set of doors will insure a closed condition of the next adjacent set of doors above and below, substantially as set forth.

In testimony whereof witness my hand this 8th day of January, 1896.

W. A. CROSS.

In presence of—

ROBERT BURNS,
JAMES LAVALLIN.