No. 693,952. Patented Feb. 25, 1902.

W. A. CROSS.

WAREHOUSE DOOR.

(Application filed Mar. 10, 1900.)

(No Model.) 2 Sheets—Sheet 1.

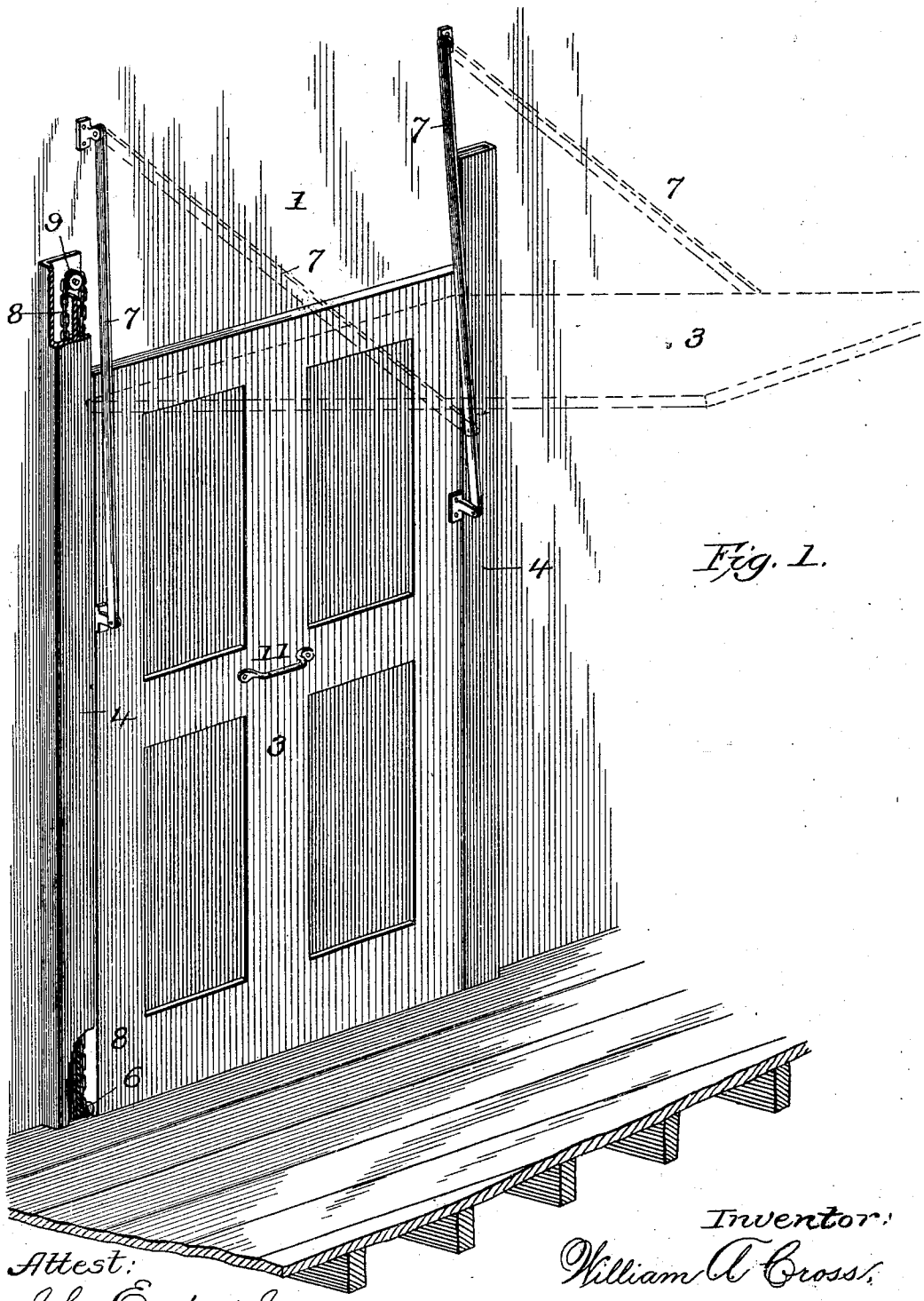


Fig. 1.

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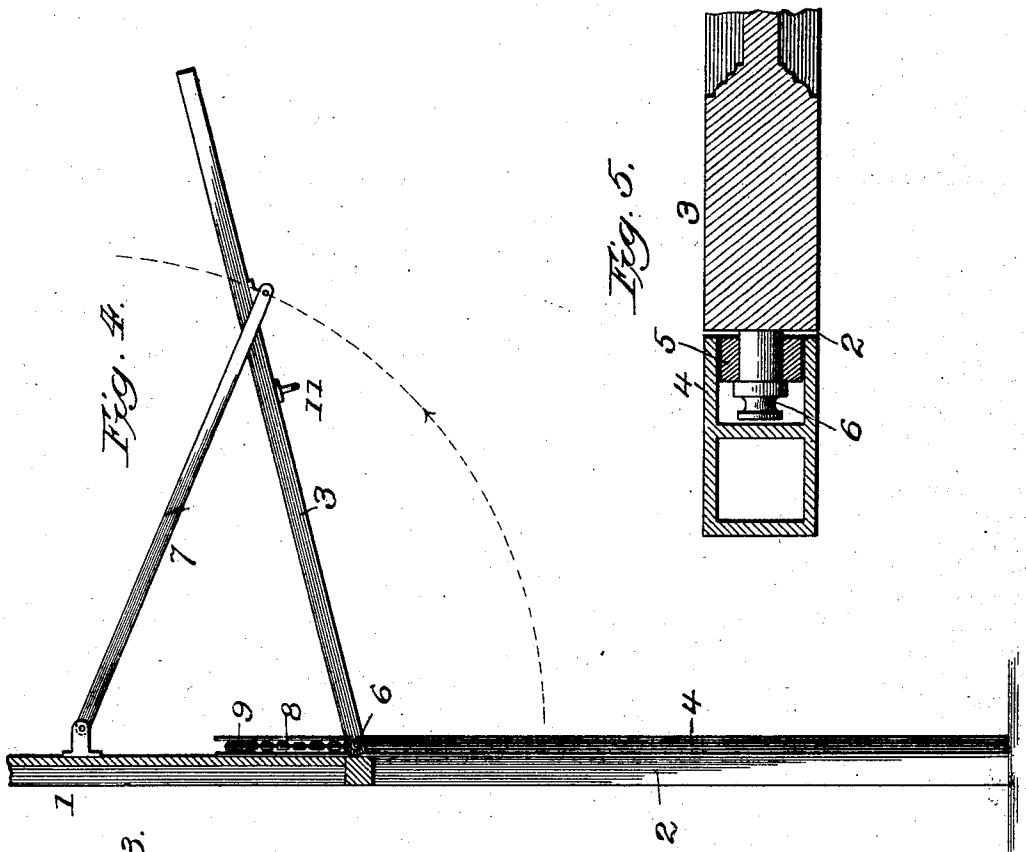
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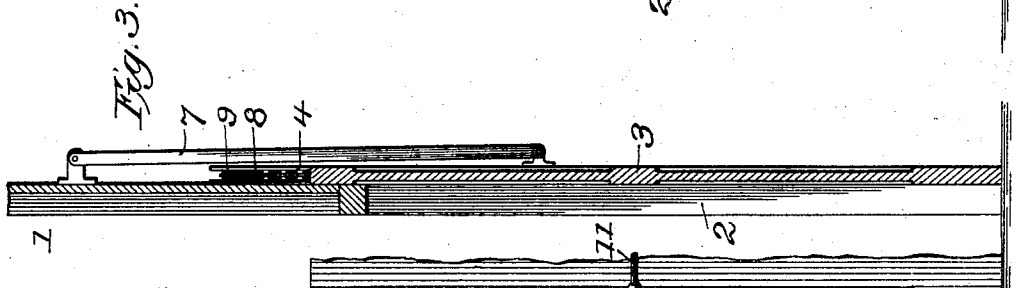
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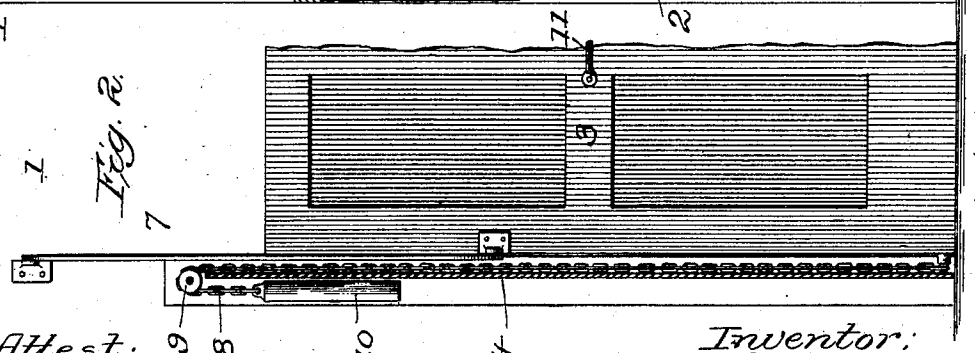
WAREHOUSE DOOR.

(Application filed Mar. 10, 1900.)

(No Model.) 2 Sheets—Sheet 2.







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UNITED STATES PATENT OFFICE.

WILLIAM A. CROSS, OF CHICAGO, ILLINOIS.

WAREHOUSE-DOOR.

SPECIFICATION forming part of Letters Patent No. 693,952, dated February 25, 1902.

Application filed March 10, 1900. Serial No. 8,114. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. CROSS, a citizen of the United States of America, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Warehouse-Doors, of which the following is a specification.

The present invention relates to a vertically-swinging door for warehouse-doorways and other like openings.

The object of the present improvement is to provide a simple, durable, and efficient connecting and supporting attachment for the door to the door-frame and which affords an easy and convenient manipulation of the door from a closed to an open condition, and vice versa, all as will hereinafter more fully appear, and be more particularly pointed out in the claims. I attain such object by the construction and arrangement of parts illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a counterbalanced warehouse-door embodying the present improvements, the door being shown in a closed condition in full lines and in an open condition in dotted lines; Fig. 2, a fragmentary side elevation of the door with the side guideway in section; Fig. 3, a vertical transverse section of the door and doorway, illustrating the door in a closed position; Fig. 4, a similar view with the door in an open or raised position; Fig. 5, an enlarged detail horizontal section through a lower corner of the door, illustrating the guide and guide-roller thereof.

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

Referring to the drawings, 1 represents a wall or partition of a building; 2, the opening or doorway therein; 3, the door, and 4 vertical guides or slideways at the sides of the doorway, and which slideways are in my preferred construction formed by sections of channel-iron, as shown in the drawings.

In the present improvement the door comprises a single section or piece of the required dimensions to close the doorway or opening 2, and such door will be connected as a whole to the slideways by suitable slide and pivot connections arranged opposite each other at the lower end of the door and engaging in the respective slideways to constitute a combined sliding and pivotal connection between the lower end of the door and such slideways. Said slide and pivot connections will usually comprise combined guide and pivot blocks 5, connected to the lower ends of the door by means of the pivot-pintles 6, as illustrated in Fig. 5, and as so arranged the guide-blocks 6 are adapted to move in the vertical guide-grooves of the stationary guides 4 and confine the extreme lower end of the door to a movement in a vertical plane. At top the door is free to swing inward away from the guideways in an opening movement of the door, as hereinafter set forth.

7 represents a pair of counterpart radius links or bars, pivoted at one end above the door to the door-frame or wall 1 and at the other end to the door midway of its height, as illustrated in the drawings.

With the above-described arrangement and connection of parts the upper end of the door is adapted to swing inward upon the aforesaid links 7 as a pivot, while the lower end of the door is guided vertically in manner heretofore described in the movement of the door into the open position and substantially horizontal position illustrated in Figs. 1 and 4 of the drawings.

8 represents counterbalance cords or chains secured at one end to the lower end of the door, preferably to the pintle-pins 6 of the guide-blocks 5, and arranged to pass over elevated pulleys 9, their opposite ends being connected to the counterbalance-weights 10.

With the described construction the weight of the door is very evenly counterbalanced and the operation thereof to an open or closed position rendered easy and convenient.

11 represents handles or hasps secured to the door to afford convenient means for manipulating the same to a closed or open position.

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

1. The combination of a door frame or way, vertical slideways at the sides of the same, and extending the height of the doorway, a door having sliding and pivotal connections at its lower end with said slideways, so that

the same will maintain engagement with the slideways when the lower end of the door is moved to a point immediately adjacent to the top of the doorway, and a pivot-link pivoted to the door, and to the door-frame above the door, substantially as set forth.

2. The combination of a door frame or way, vertical slideways at the sides of the same, and extending the height of the doorway, a door having sliding and pivotal connections at its lower end with said slideways, so that the same will maintain engagement with the slideways when the lower end of the door is moved to a point immediately adjacent to the top of the doorway, a pivot-link pivoted to the door-frame above the door, and means for counterbalancing the weight of the door, substantially as set forth.

3. The combination of a door frame or way, vertical slideways at the sides of the same, and extending the height of the doorway, a door having sliding and pivotal connections at its lower end with said slideways by means of guide-pintles engaging in said slideways, so that the same will maintain engagement with the slideways when the lower end of the door is moved to a point immediately adjacent to the top of the doorway, and a pivot-link pivoted to the door and to the door-frame above the door, substantially as set forth.

4. The combination of a door frame or way, vertical slideways at the sides of the same, a door having sliding and pivotal connections at its lower end with said slideways by means of guide-pintles engaging in said slideways, and flexible connections passing over elevated pulleys and connected at one end to counterbalance-weights, and at the other end to the lower end of the door, substantially as set forth.

5. The combination with a vertically-swinging door and casing, of a pair of links pivoted to the sides of the door respectively, at one end and to the casing above the door at the other end and a counterbalance connected to the lower edge of the door and pulling upward; substantially as described.

Signed by me at Chicago, Illinois, this 8th day of March, 1900.

WILLIAM A. CROSS.

Witnesses:

ROBERT BURNS,

JOHN ENDERS, Jr.