

(No Model.)

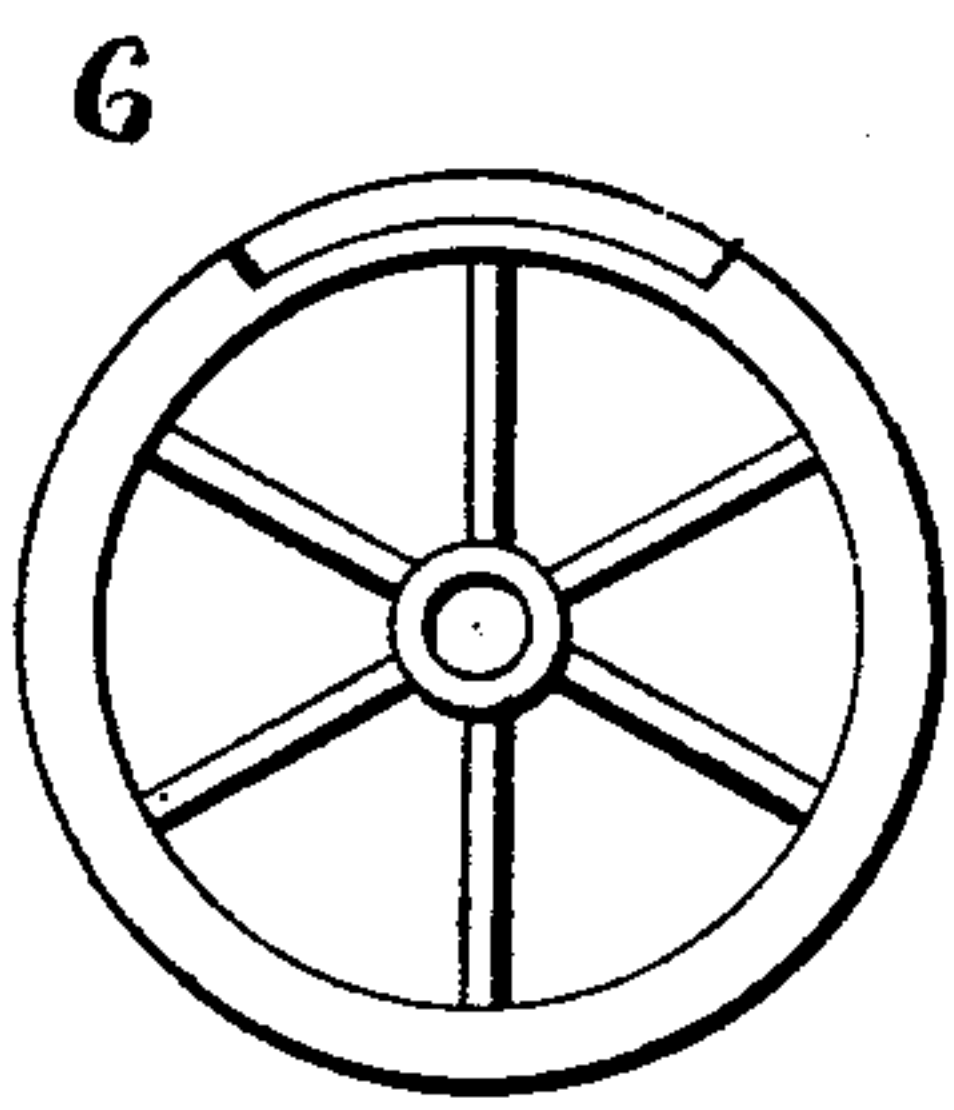
2 Sheets—Sheet 1.

C. RUSSELL & A. C. WELCHANS.
SAFETY DEVICE FOR ELEVATORS.

No. 587,610

Patented Aug. 3, 1897.

Fig. 1.



Witnesses
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Hubert D. Peck

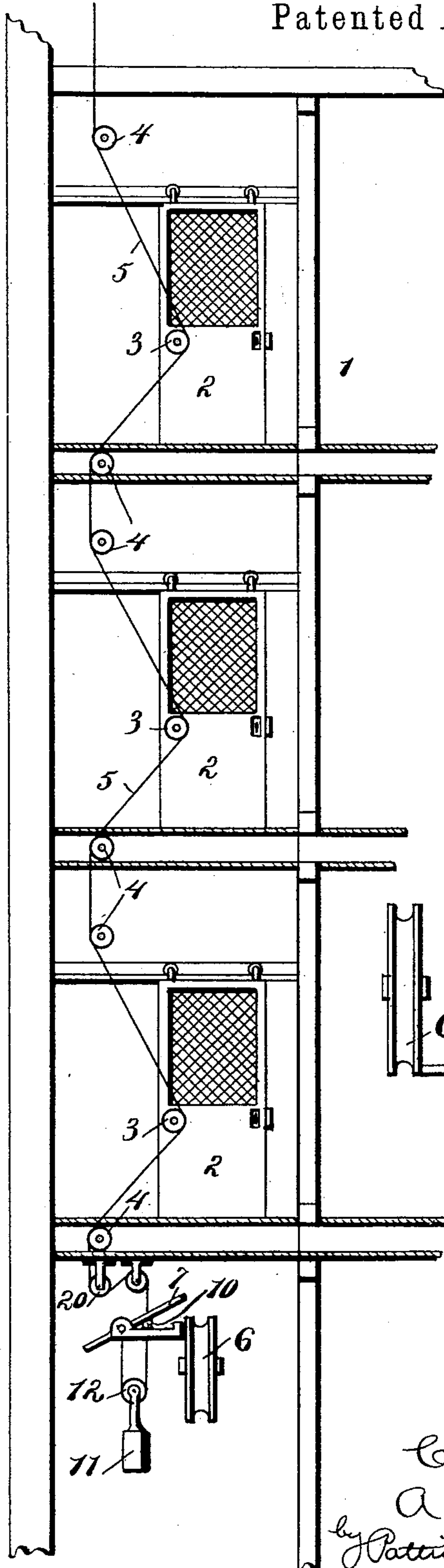
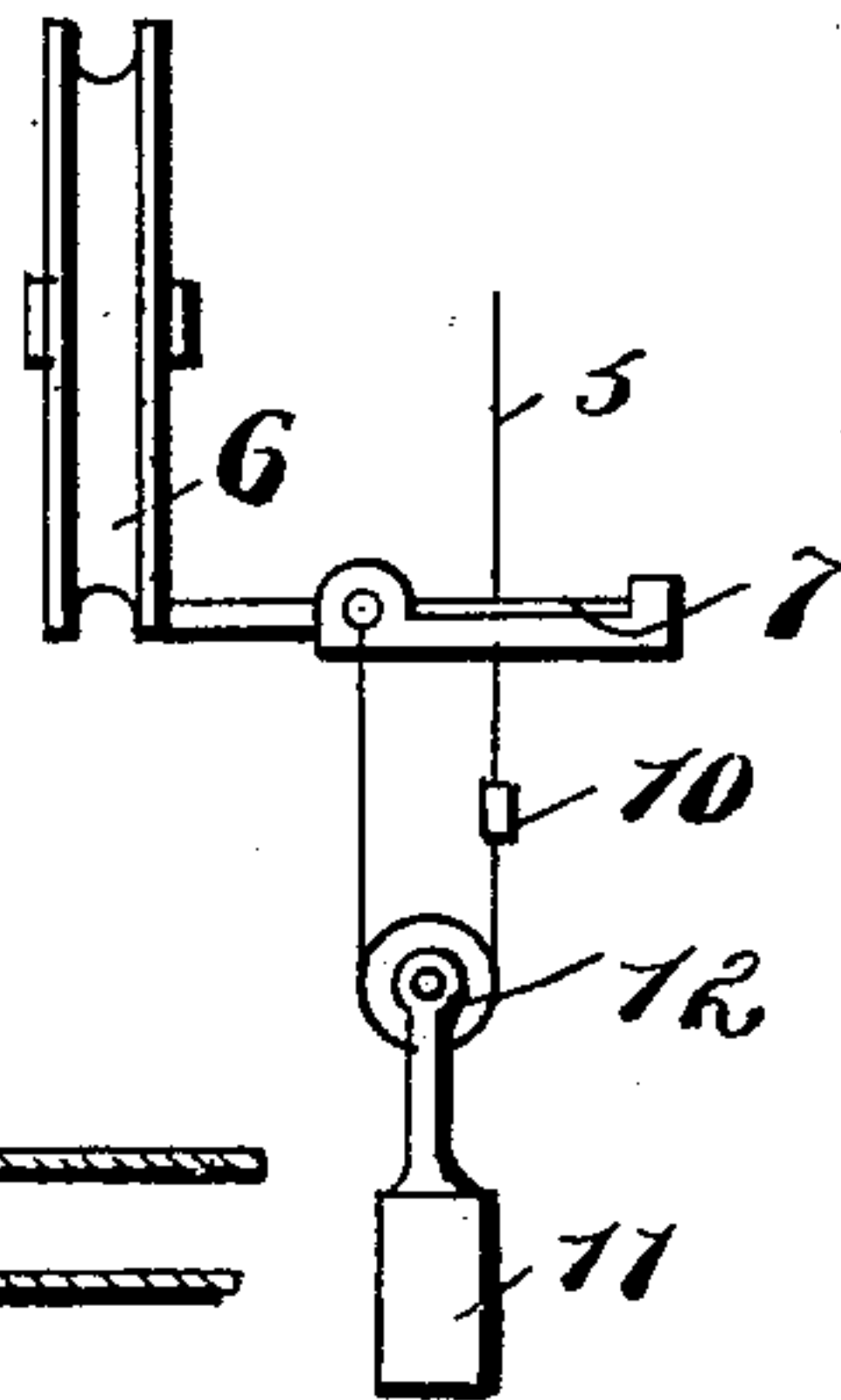


Fig. 5.



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(No Model.)

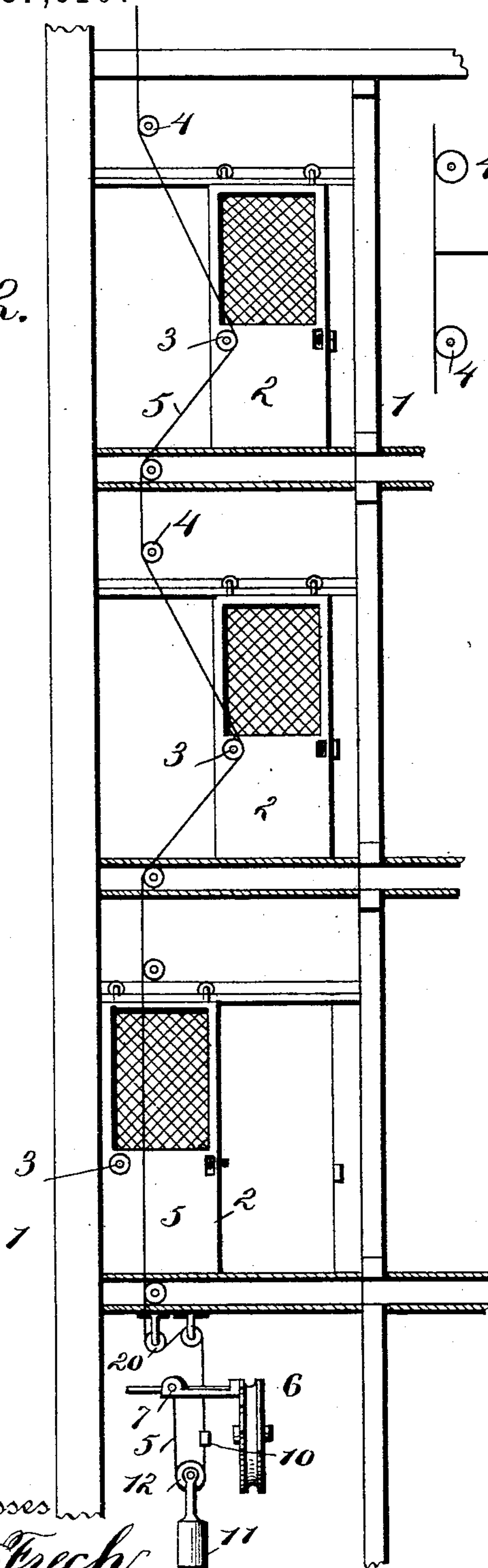
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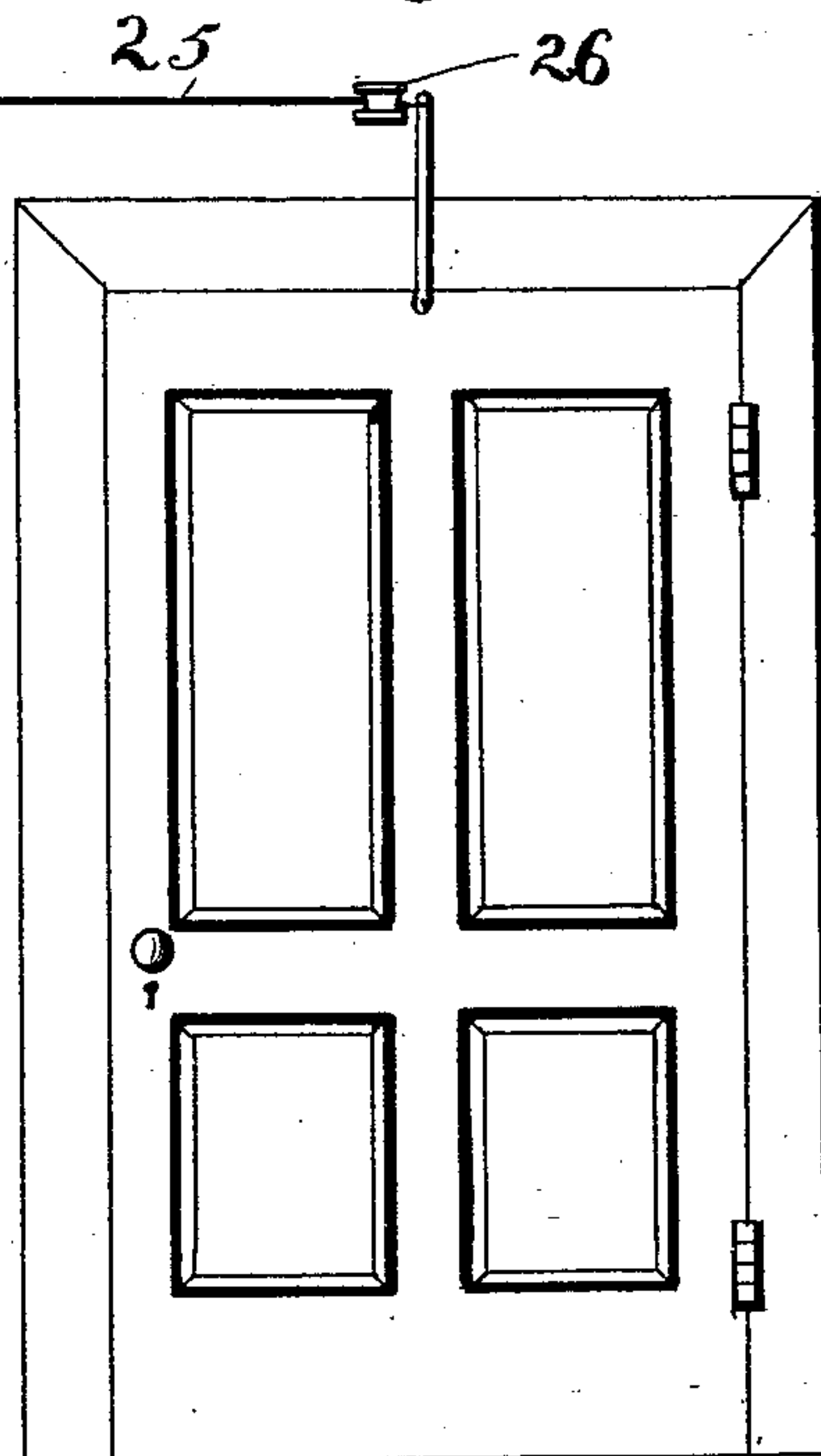
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Fig. 2.



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Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES RUSSELL, OF SHARON HILL, AND ALBERT C. WELCHANS, OF LANCASTER, PENNSYLVANIA; SAID RUSSELL ASSIGNOR TO SAID WELCHANS.

SAFETY DEVICE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 587,610, dated August 3, 1897.

Application filed January 13, 1897. Serial No. 619,061. (No model.)

To all whom it may concern:

Be it known that we, CHARLES RUSSELL, of Sharon Hill, in the county of Delaware, and ALBERT C. WELCHANS, of Lancaster, in the county of Lancaster, State of Pennsylvania, have invented certain new and useful Improvements in Safety Devices for Elevators; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates to improvements in safety devices for elevators; and it pertains to providing means for locking the controlling member of the hoisting mechanism through the medium of a connection universal or common to the series of doors throughout the shaft.

The object of our invention is to provide a lock for the controlling member of the hoisting mechanism, whereby when any of a series of doors is opened in the shaft the locking member will be thrown in engagement with the controller of the hoisting mechanism and lock it against movement.

In the accompanying drawings, Figure 1 is a view of an elevator-shaft, showing a series of doors in closed position and the lock out of engagement with the controller member. Fig. 2 is a similar view, the lower door being shown open and the lock permitted to drop in engagement with the controlling member. Fig. 3 is a view showing the invention applied to a swinging door instead of a sliding door. Fig. 4 is a side elevation of the controlling wheel or member of the hoisting mechanism. Fig. 5 is a modified form of the locking-lever, showing it in engagement with the under side of the controlling member of the hoisting mechanism.

1 indicates the elevator-shaft, and 2 the doors. A flexible cable 5 is connected at its upper end to the upper end of the shaft in any suitable manner and passes downward to the lower end of the shaft in a manner to be now described. Each door is provided with a sheave or guide 3, around which this flexible cable 5 passes, and the shaft is provided

with sheaves or guides 4 between the doors for holding the cable against lateral deflection by the movement of the doors. The lower portion of this cable passes around sheaves 20 and has its end secured to the pivotal point of the locking-lever 7 or to any other desired object. A weight 11 is supported by the lower end of this flexible cable 5 upon a sheave 12, as shown, the cable doubling around the said sheave before passing upward. The function of this weight is to hold the cable tight and to take up any slack which occurs by the opening of the doors.

As shown in Fig. 1, all of the doors are in a closed position, and the flexible cable is deflected or drawn to one side of a straight line by each door, as shown, and through the medium of a stop 10, secured to the flexible cable just below the locking-lever 7, the locking-lever is held up and out of contact with the controlling member 6 of the hoisting mechanism. When any one of the doors is opened—say, for instance, the lower door, as shown in Fig. 2—the flexible cable is permitted to lengthen, and the weight 11 draws the stop 10 out of engagement with the locking-lever, permitting it to drop down in engagement with the notch shown in the periphery of the controlling locking member. In this way the controlling mechanism is prevented from moving when any one of the doors is opened, so that the operator cannot move the elevator-car.

As shown in Fig. 5, the locking-lever is reversed—that is, its locking end is situated below the controlling member 6 of the hoisting mechanism. The opposite end, being the heavier, holds the locking end of the lever in engagement with the lower periphery of the controlling member, as clearly shown in that figure. In this instance the stop 10 upon the flexible connection 5 engages the lever at that side of its pivotal point away from or opposite the controlling member 6, so that when the doors are all closed the stop 10 is drawn in contact with that end of the lever, throwing its locking end out of engagement with the periphery of the controlling member or wheel 6, as will be readily understood.

In Fig. 3 we show the invention as applicable to a swinging door. In this instance a

connection 25 is made between the cable or flexible connection 5 and the door, the said connection 25 passing around a sheave or other guide 26. From this it will be seen
 5 that when the doors are closed the locking-lever is out of engagement with the controlling member, but when any one of the doors is opened the flexible connection or cable 5 is tight and the controlling member drawn in
 10 contact with the locking-lever 7.

From the above description it will be seen that we have produced a very simple locking mechanism for an elevator and one which is reliable and not likely to get out of order.

15 Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In an elevator-lock, the combination of the shaft, the doors, a controlling member for
 20 the hoisting mechanism, a lever engaging directly said controlling member and adapted to lock and release it, a cable attached to the upper end of the shaft and extending throughout its length, a connection between the doors
 25 and said cable whereby a movement of the doors deflects the cable and moves its lower end vertically, and a stop carried by said cable engaging directly said locking member or lever, substantially as described.

30 2. In a lock for elevators, the combination of the shaft, the doors therefor, a controlling member for the hoisting mechanism, a locking member for said controlling member, a cable attached at its upper end at the upper
 35 end of the shaft and extending throughout

its length, connections between the doors and said cable whereby the movement of a door moves the lower end of the cable vertically, the cable passing by and below said locking member, and a stop carried by the cable at a
 40 point below the locking member for engaging said locking member when the cable is actuated, substantially as and for the purpose described.

3. An elevator-lock comprising the doors, a
 45 cable having its upper end connected at the upper end of the shaft, the doors having guides around or through which the cable passes, guides between the doors to hold the cable against lateral deflection at that point,
 50 the lower end of the cable being connected at a point below the locking-lever, a weight suspended by the cable at a point below the locking-lever and holding the cable taut, and a stop carried by the cable adapted to engage
 55 the locking-lever when the cable is deflected by the several doors and lift it out of engagement with the controlling member, and when one of the doors is opened to release the ca-
 60 ble, the weight tightening it and carrying the stop out of engagement with the locking-lever, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

CHARLES RUSSELL.
 ALBERT C. WELCHANS.

Witnesses:

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 THOS. C. WILEY.