

(No Model.)

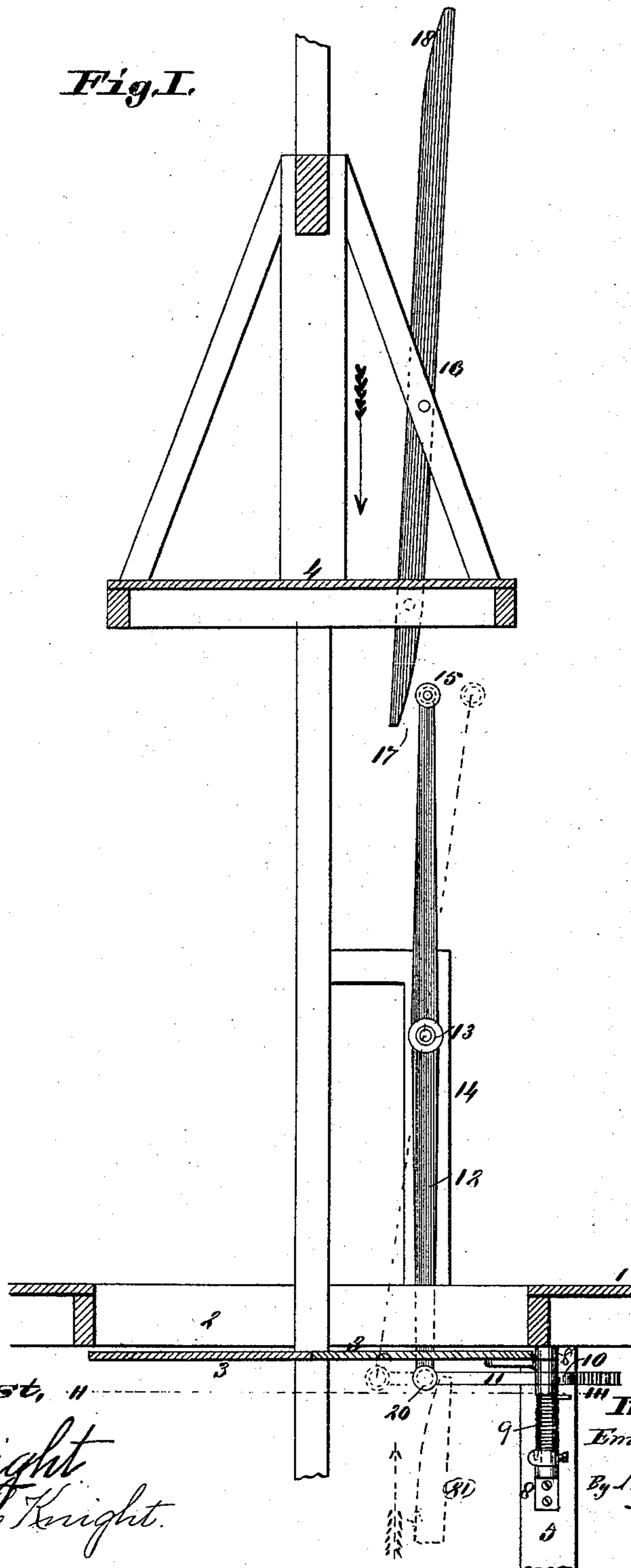
2 Sheets—Sheet 1.

E. J. HERMAN.
HATCHWAY.

No. 410,278.

Patented Sept. 3, 1889.

Fig. I.



Attest, "

Wm E Knight
Samuel D Knight.

Inventor,

Emile J. Herman

By Knight Bros

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(No Model.)

2 Sheets—Sheet 2.

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Fig. II.

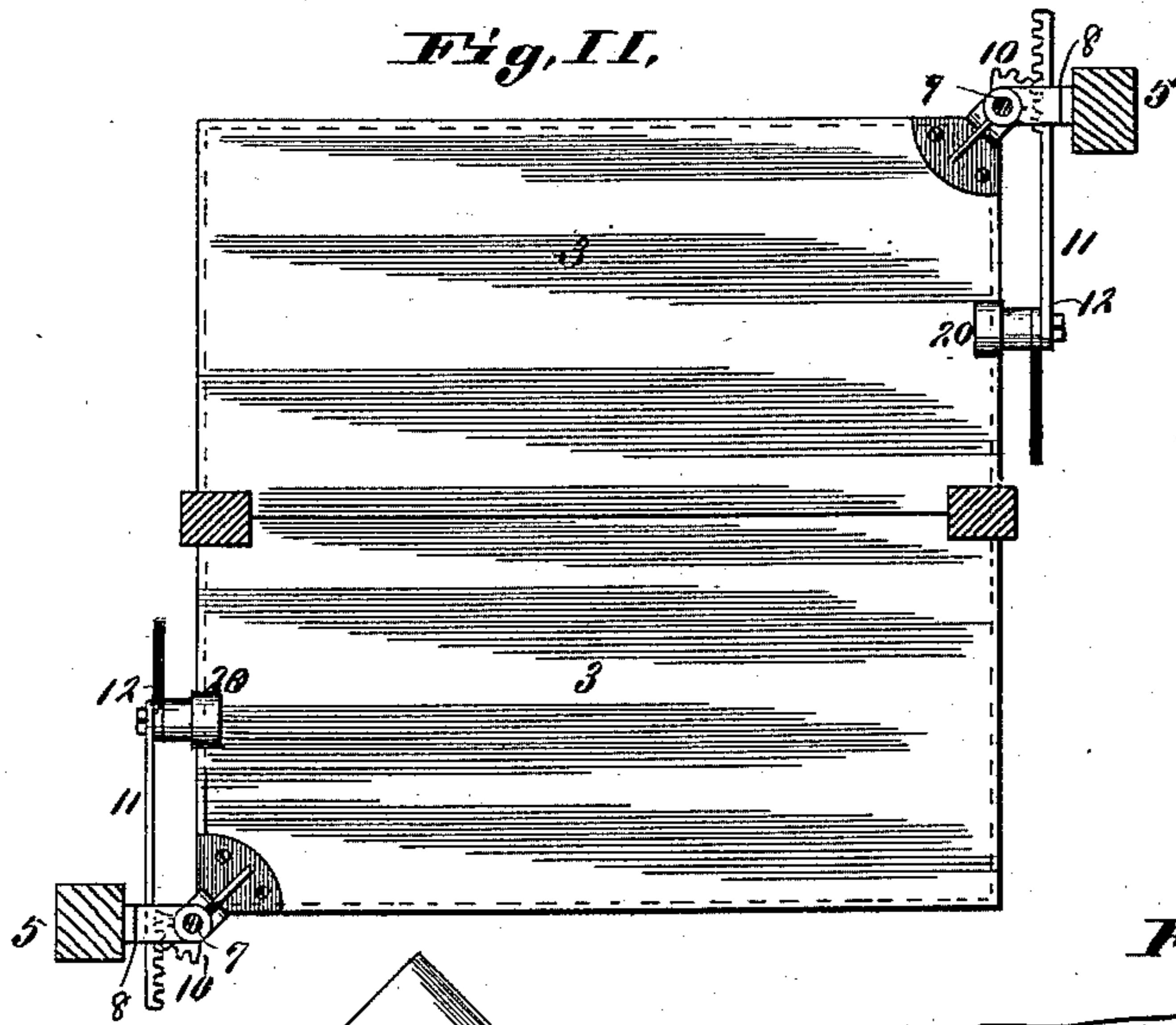


Fig. IV.

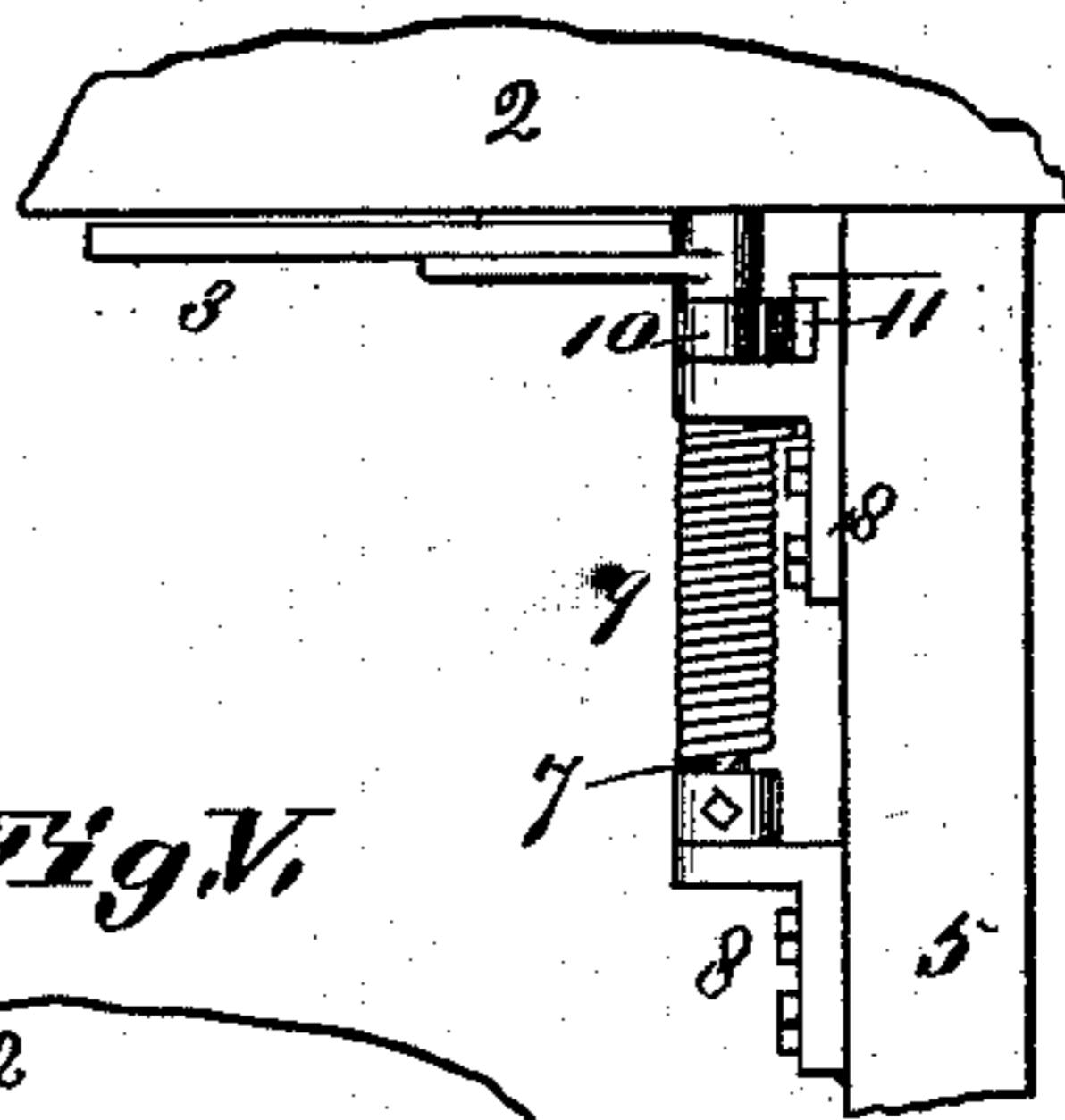


Fig. V.

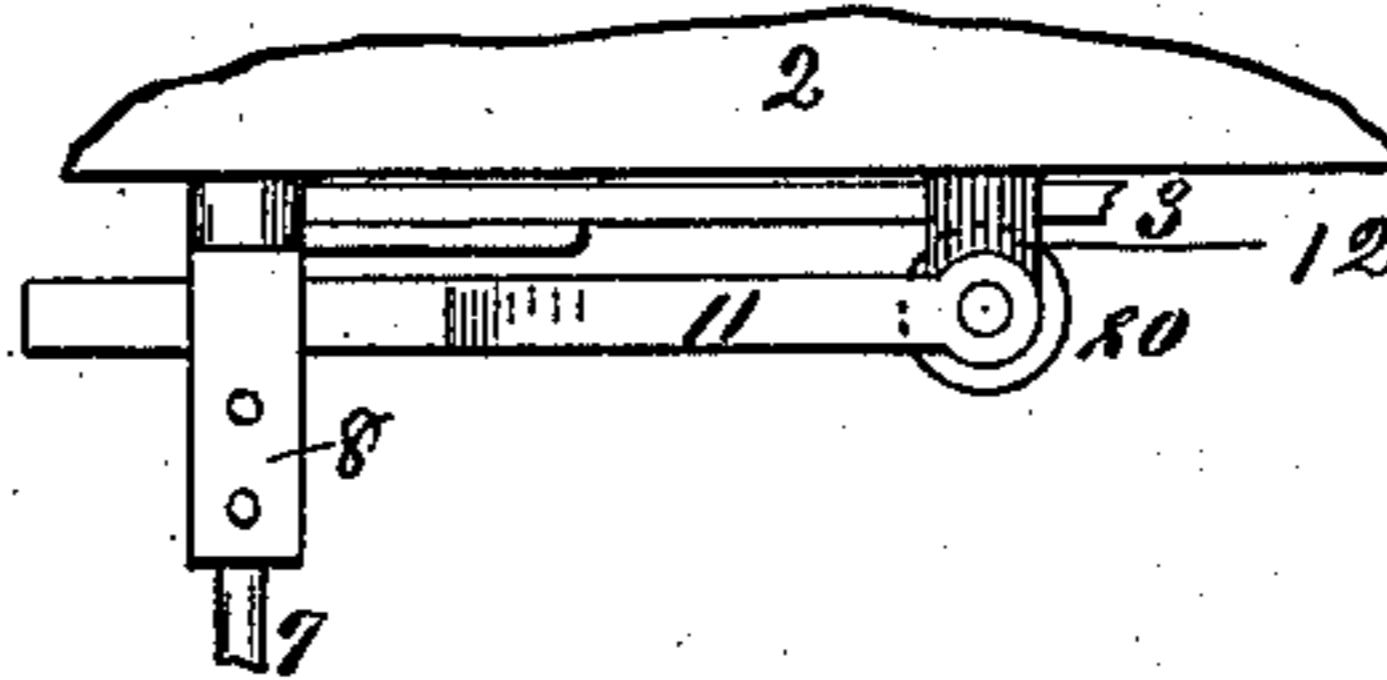
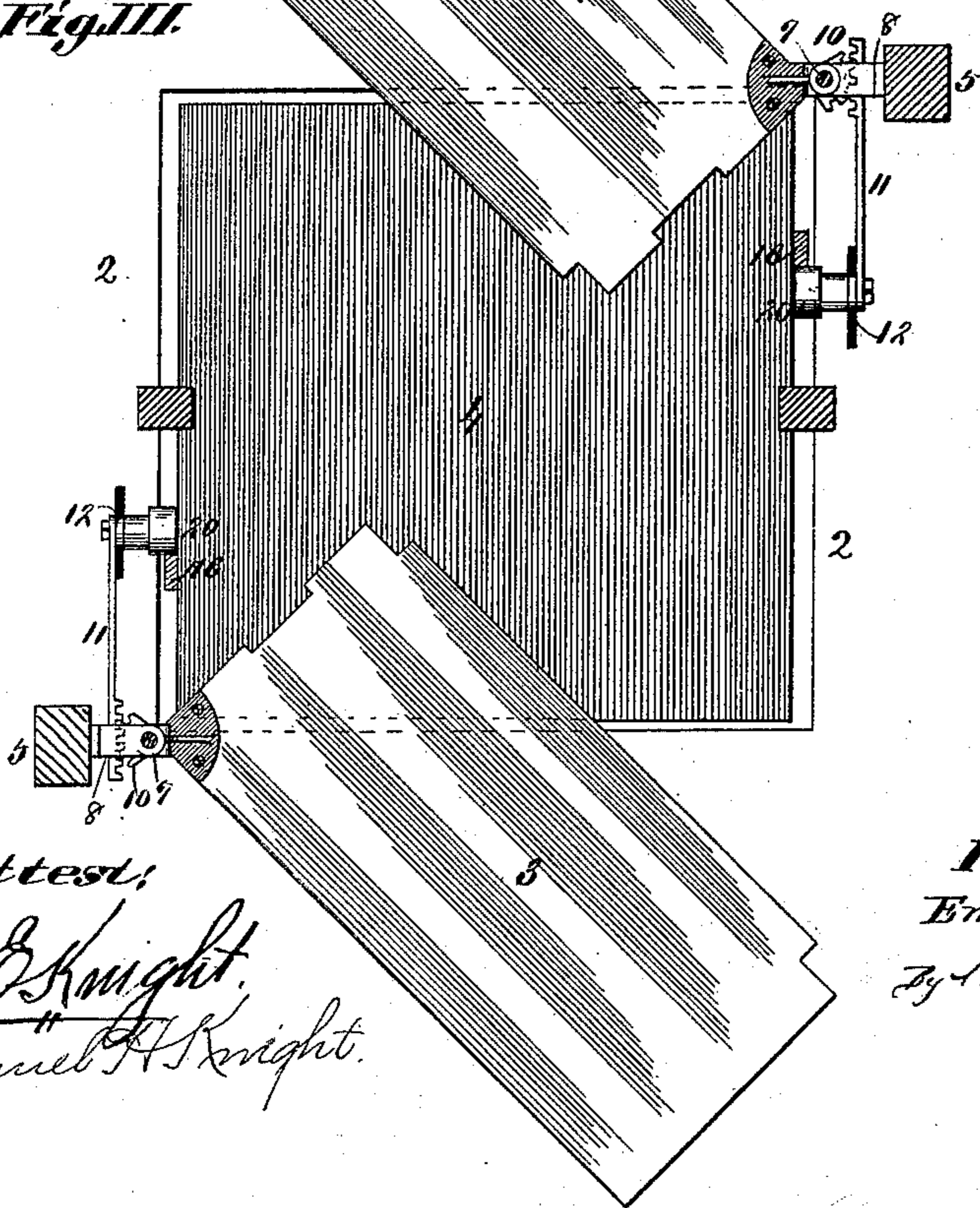


Fig. III.



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UNITED STATES PATENT OFFICE.

EMILE J. HERMAN, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE SAFETY
HATCH DOOR COMPANY, OF SAME PLACE.

HATCHWAY.

SPECIFICATION forming part of Letters Patent No. 410,278, dated September 3, 1889.

Application filed September 1, 1888. Serial No. 284,331. (No model.)

To all whom it may concern:

Be it known that I, EMILE J. HERMAN, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Self-Closing Hatchways, of which the following is a full clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure I is a vertical section through the doors of an elevator-shaft and a cage, showing the doors closed and the operating mechanism in elevation. Figs. II and III are horizontal transverse sections looking upward, taken on line II III, Fig. I, Fig. II showing the doors closed, and Fig. III showing the doors partly opened. Fig. IV is an enlarged detail elevation of the door-support. Fig. V is an enlarged detail elevation of the door-support, looking in a direction at right angles to that shown in Fig. IV.

This invention relates to an improvement upon the Letters Patent granted to Richard D. Thackston and Henry I. Coe March 27, 1883, No. 274,844; and it consists in devices for opening and closing such horizontal doors as shown in said patent.

Referring to the drawings, 1 represents the floor of a building; 2, the hatchway or opening; 3, the doors, and 4 the cage or car of an elevator. The doors are pivoted by their corners to suitable supports—as, for instance, the uprights 5 of the elevator shaft or well. (See Figs. II and III, the doors being shown closed in Fig. II and partly opened in Fig. III.) The manner in which these doors open and close is fully described in the patent referred to; but an improvement in the device for opening and closing them forms the subject-matter of my invention.

7 represents short vertical shafts journaled in boxes 8, by which they are secured to the uprights 5 or other supports, and to these shafts the doors are rigidly secured. The shafts are provided with springs 9, which act to close the doors after they have been opened. Secured to the pivoted corner of each door is a rack-segment 10, engaged by a connecting and sliding rack-bar 11. (See Figs. II and III.) The inner end of each rack-bar is se-

cured to the lower end of a lever or rock-bar 12, that is pivoted at 13 to a fixed support 14. The rack-segment and rack-bar thus form a connecting device between the lever and the door. The upper end of the lever 12 is preferably provided with a friction-roller 15. Secured to the cage 4 is a cam or bar 16, which has at its lower end a bevel or incline 17 on its outer edge, and which has at the upper end a bevel or incline 18 on its inner edge.

The operation is as follows: As the cage descends the parts are in the position shown in Fig. I, the incline 17 insuring the passage of the bar 16 on the inside of the roller 15 on the upper end of the lever 12. As the cage continues to descend the bar 16 comes against the roller 15, and the lever is gradually forced into the position shown in dotted lines, Fig. I. This moves the rack-bar inwardly, and this, through means of the rack-segment 10, produces the opening of the door with a slow gradual horizontal movement, as the bearing between the upper end of the lever 12 and the bar 16 is gradual from end to end of the latter. By the time the cage reaches the hatchway the door is fully opened. In the ascent of the cage the incline 18 insures the passage of the bar 16 on the outside of a roller 20, secured to the lower end of the lever 12, (see dotted line 21, Fig. I,) and as the cage continues to ascend the lower end of the lever 12 is forced inwardly again, opening the door, so that by the time the cage reaches the door it is fully opened. After the cage passes, the door is closed under the influence of the spring 9. In case two doors are used, as shown in Figs. II and III, there will be a duplicate of the device I have described for each.

I claim as my invention—

1. The combination of a car 4, the bar 16, secured thereon, the horizontal door 3, having vertical shaft 7, the rock-bar 12, with which the bar 16 engages, pivoted to the side of the elevator-well, and the sliding bar 11, connected with the lower end of the rock-bar and with the shaft, substantially as described.
2. The combination of a car 4, the bar 16, secured thereon, having end inclines 17 and 18, the horizontal doors 3, having a vertical

shaft 7, the rock-bar 12, with which the bar 16 engages, pivoted to the side of the elevator-well, and the sliding bar 11, connected with the lower end of the rock-bar and with the shaft, substantially as described.

3. The combination of a car 4, the bar 16, secured thereon, the horizontal door 3, having vertical shaft 7, the rock-bar 12, with which the bar 16 engages, pivoted to the side of the elevator-well, the journal-boxes 8 8 for the shaft, the closing-spring 9, coiled around the shaft, and the sliding bar 11, connected with the lower end of the rock-bar and with the shaft, substantially as described.

15 4. The combination of a car 4, the bar 16, secured thereon, the horizontal door 3, having vertical pivot 7, provided with a rack-seg-

ment 10, the rock-bar with which the bar engages pivoted to the side of the elevator-well, and the sliding rack-bar 11, connected with the lower end of the rock-bar and with the rack-segment on the shaft, substantially as described.

5. The combination of the car 4, provided with the bar 16, having the end inclines 17 25 18, the rock-bar 12, pivoted to the side of the elevator-well, the door 3, short vertical shaft 7, journal-boxes 8, spring 9, rack-segment 10, and rack-bar 11, substantially as described.

EMILE J. HERMAN.

In presence of—

BENJN. A. KNIGHT,

EDW. S. KNIGHT.