

No. 714,153.

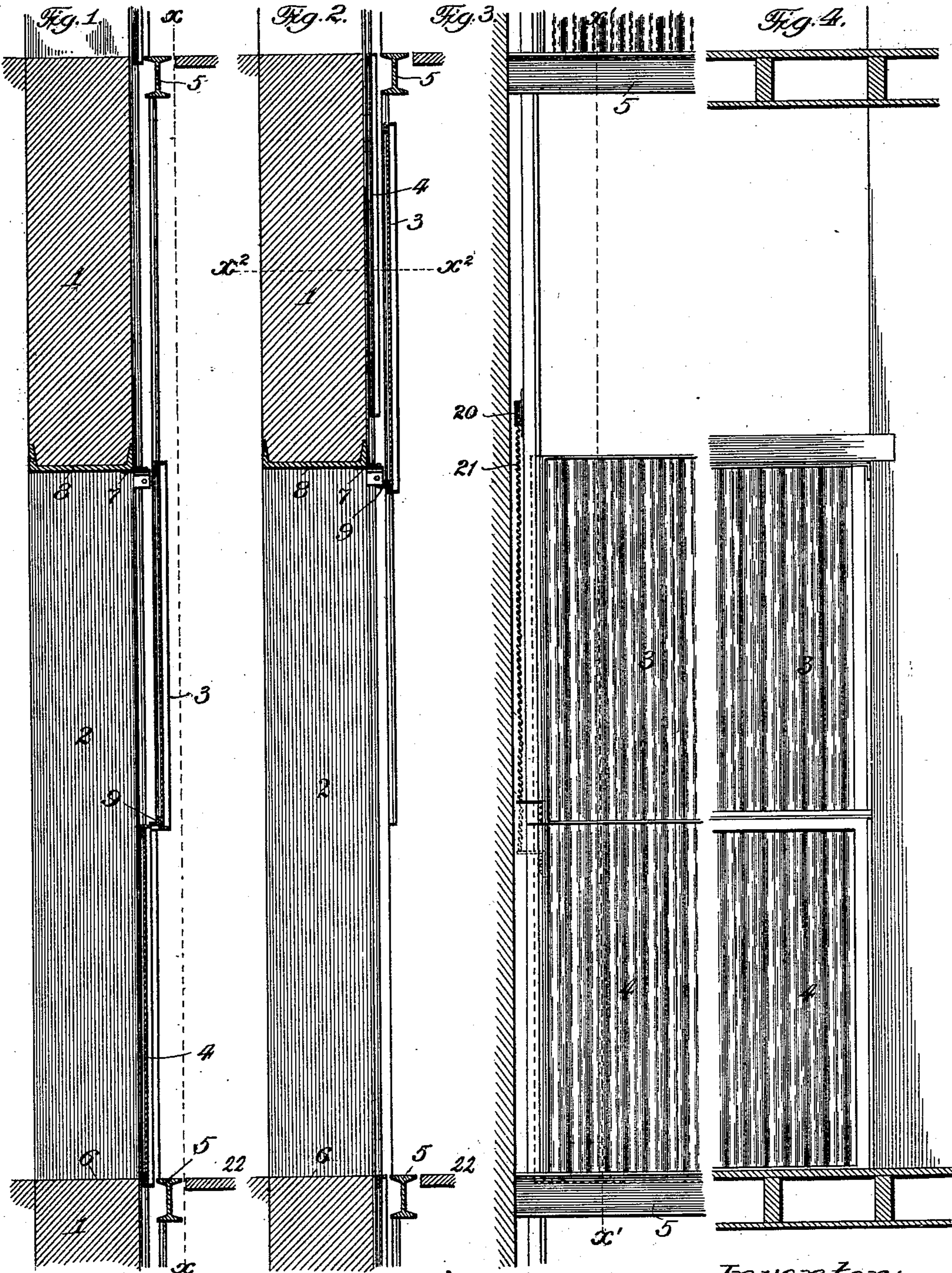
Patented Nov. 25, 1902.

W. A. CROSS.  
WELL DOOR FOR ELEVATORS.

(Application filed June 14, 1902.)

(No Model.)

2 Sheets—Sheet 1.



Attest:

John Enders Jr.  
Henry A. Kott

Inventor:

William A. Cross,  
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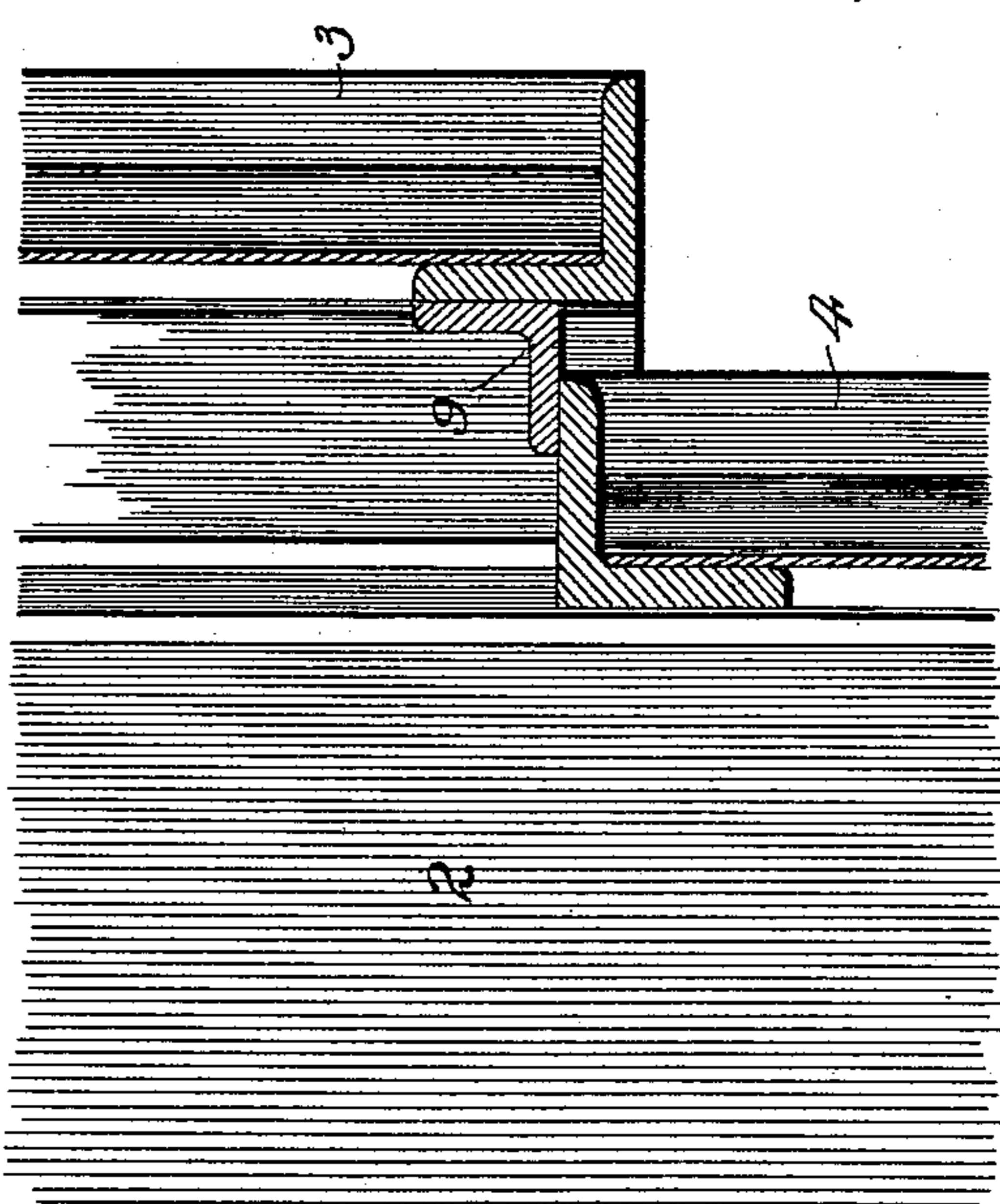
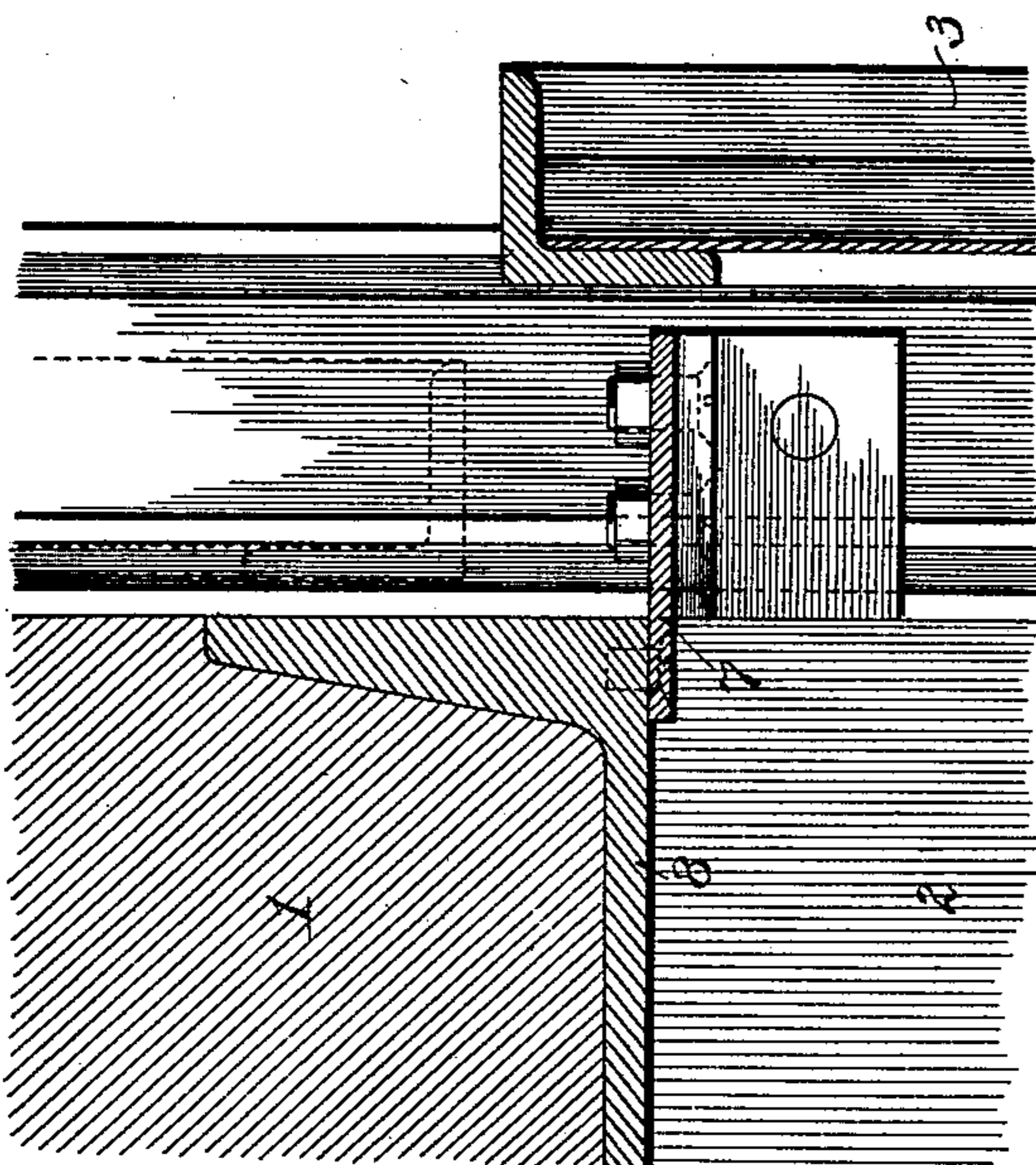
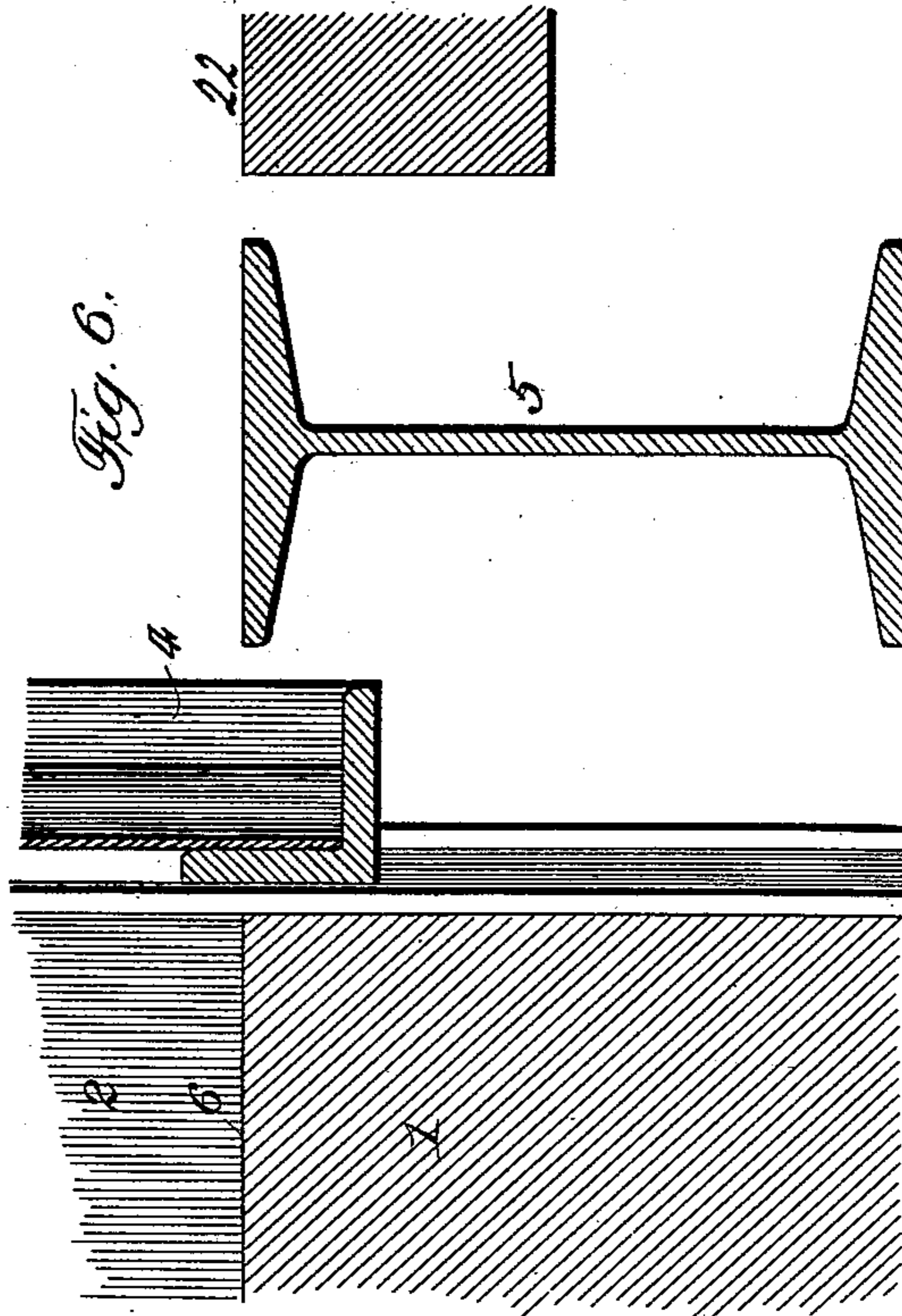
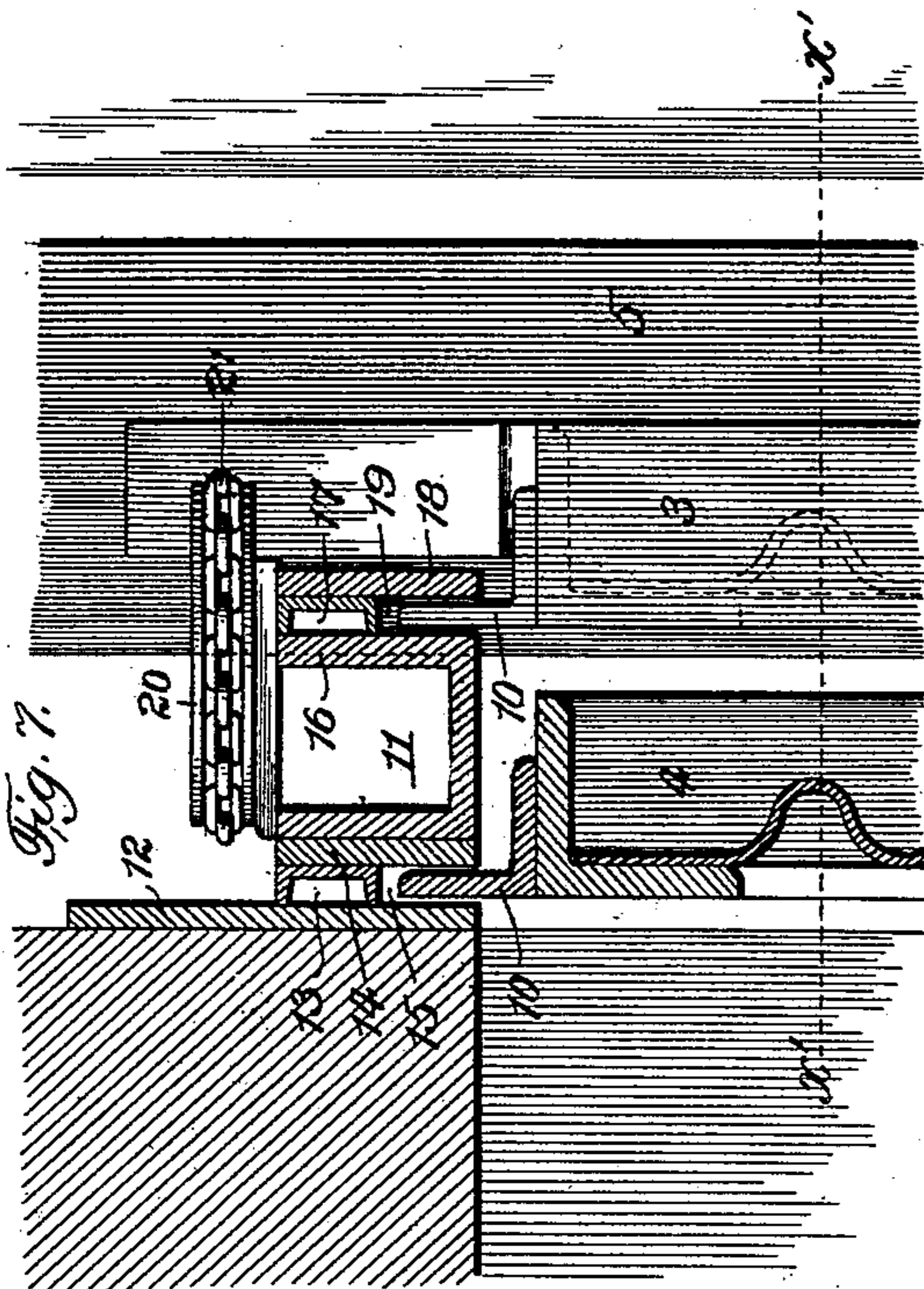
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# UNITED STATES PATENT OFFICE.

WILLIAM A. CROSS, OF CHICAGO, ILLINOIS.

## WELL-DOOR FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 714,153, dated November 25, 1902.

Application filed June 14, 1902. Serial No. 111,617. (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 Well-Doors for Elevators, of which the following is a specification.

The present invention relates to that type of vertically-moving well-doors for elevators in which the doors are formed in halves that are operatively connected together so as to simultaneously move in opposite directions in the travel of such door halves or sections to open or close the door-openings in the elevator-wells, and has for its object to provide a simple, durable, and effective construction and arrangement of parts by means of which a very small space or gap between the thresholds of the different door-openings and the elevator-platform is attained and in consequence of which the usual rapid wear of the adjacent edges of the thresholds and of the platform by the constant pounding of freight-trucks over such gaps when of any width is prevented in a great measure and a maximum width of elevator-platform attained. I attain such object by the construction and arrangement of parts illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional elevation of an elevator-well and its vertically-moving sectional doors embodying the present invention, the pair of door sections or halves being shown in a position closing the door-opening of the elevator-well; Fig. 2, a similar view illustrating the pair of door sections or halves in an opened condition; Fig. 3, a fragmentary sectional elevation at line  $x x$ , Fig. 1; Fig. 4, a fragmentary elevation of the parts from the opposite side to that shown in Fig. 3; Fig. 5, an enlarged detail vertical section at line  $x' x'$ , Figs. 3 and 7, illustrating the lintel portion of the door-opening, the adjacent parts of the door-sections, guides, &c., and the meeting ends of the upper and lower door-sections; Fig. 6, a similar section at same line illustrating the threshold portion of the door-opening, the adjacent supplementary threshold, and the adjacent por-

tions of the lower door-section, &c.; Fig. 7, a detail horizontal section at line  $x^2 x^2$ , Fig. 2, illustrating the construction of the vertical side guides for the door-sections and the chain-and-sheave connections between the same.

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

Heretofore in the class of vertically-moving doors for freight-elevator wells, to which the present invention belongs and an example of which may be found in my prior patent, No. 560,396, of May 19, 1896, the sectional doors were arranged wholly within the elevator-well, and in consequence a gap had to be left between the edge of each threshold and the edge of the elevator-platform to permit of the free movement of such elevator-platform. Heretofore such gap has been a serious obstruction to the free and easy passage of the ordinary freight-trucks off and on the elevator-platform, and, as before stated, the main object of the present improvement involves a construction in which the size of such gap is reduced in a very material degree and is attained by an arrangement of parts shown in the accompanying drawings, as follows:

1 represents the wall of the elevator-well, in which the door-openings 2 at the different floors of the building are formed.

3 and 4 are the respective upper and lower sections or halves of the series of doors, which normally close the series of door-openings 2 of the building. In the present invention the series of upper sections 3 are arranged in vertical alinement one with the other, while the other series of lower sections 4 are arranged in similar vertical alinement at a plane immediately adjacent to that of the series of upper sections.

5 represents a series of supplementary thresholds formed, preferably, of structural-iron beams of an I or other suitable form, and which supplementary thresholds are arranged in separated relation to the main thresholds 6 of the respective door-openings 2, so as to form a series of narrow vertical passages, in which the series of lower door-sections 4 are adapted to travel in their vertical movements. In the present invention the series of supple-

mentary thresholds 5 are arranged in vertical alinement and have their upper surfaces on a level with the surfaces of the main thresholds 6 and constitute track-surfaces for ordinary freight-trucks in the movement of the same off or on the elevator-platform.

7 represents horizontal plates secured to the lintels 8 of the respective door-openings 2 and arranged to project into the elevator-well to constitute stops for the upper door-sections 3 and limit the upward travel of the same.

9 represents stop-flanges on the lower ends of the upper door-sections 3, which when the respective upper and lower door-sections are in a position to close a particular door-opening rests upon the top of the lower door-section to seal the horizontal joint at the meeting point of such door-sections.

10 represents angle-iron strips secured to the vertical ends of the door-sections 3 and 4 to constitute guide-slides for the same in their movements.

11 represents vertically-arranged guides secured within the elevator-well and positioned at the sides of the respective door-openings 2 and which are adapted to receive and guide the guide-slides 10 on the respective door-sections. In the particular construction shown in the drawings such guides comprise an arrangement of parts as follows:

12 is a vertical base plate or strip secured to the wall of the elevator-well and to which strip in turn is secured a narrow vertical strip or bar 13, which acts as a distance-piece between the base-plate 12 and a vertical confining plate or strip 14, the construction being such that a vertical guide-recess 15 is formed for the reception of the guide-slides 10 of the lower door-sections 4.

16 is a distance-piece secured in turn to the confining-plate 14, and upon such distance-piece is secured a narrow vertical strip or bar 17, which, like the strip or bar 13, heretofore described, acts as a distance-piece between the distance-piece 16 and a confining-plate 18, the construction being such that a vertical guide-recess 19 is formed for the reception and guidance of the guide-slides 10 of the upper door-sections 3.

The series of vertical bars or strips above described may be made continuous and extend the entire height of the elevator-well. It is preferable, however, to make the same in sections having the required length to properly guide the individual door-sections as affording both economy and ease in manufacture.

20 represents sheaves or pulleys secured to the sides of the guides 11, and 21 represents flexible connections or chains passing around said sheaves, with their respective ends secured to the companion upper and lower door-sections of each individual door of the series to afford a counterbalancing connection for such door-sections, as usual in the present type of elevator-well doors.

22 represents a portion of the elevator cage or platform.

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

1. The combination of an elevator-well having a vertical series of door-openings, a series of supplementary thresholds arranged in vertical alinement and having a separated relation to the main thresholds of the door-openings, and a series of doors formed in sections arranged to move vertically in opposite directions, the lower series of such door-sections being arranged to travel in the space between such main and supplementary thresholds, substantially as set forth.

2. The combination of an elevator-well having a vertical series of door-openings, a series of supplementary thresholds arranged in vertical alinement and having a separated relation to the main thresholds of the door-openings, a series of doors formed in sections arranged to move vertically in opposite directions, the lower series of such door-sections being arranged to travel in the space between such main and supplementary thresholds, and means for imposing simultaneous movement in opposite directions to each pair of door-sections, substantially as set forth.

3. The combination of an elevator-well having a vertical series of door-openings, a series of supplementary thresholds arranged in vertical alinement and having a separated relation to the main thresholds of the door-openings, a series of doors formed in sections arranged to move vertically in opposite directions, the lower series of such door-sections being arranged to travel in the space between such main and supplementary thresholds, and means for imposing simultaneous movement in opposite directions to each pair of door-sections, the same comprising sheaves or pulleys arranged on the wall of the well and flexible connections extending around said pulleys and connected at their respective ends to the respective door-sections, substantially as set forth.

4. The combination of an elevator-well having a vertical series of door-openings, a series of supplementary thresholds arranged in vertical alinement and having a separated relation to the main thresholds of the door-openings, a series of doors formed in sections arranged to move vertically in opposite directions, the lower series of such door-sections being arranged to travel in the space between such main and supplementary thresholds, and stop-plates secured to the lintels of the door-openings and adapted to limit the upward movement of the upper series of door-sections, substantially as set forth.

5. The combination of an elevator-well having a vertical series of door-openings, a series of supplementary thresholds arranged in vertical alinement and having a separated relation to the main thresholds of the door-open-

ings, a series of doors formed in sections arranged to move vertically in opposite directions, the lower series of such door-sections being arranged to travel in the space between  
5 such main and supplementary thresholds, stop-plates secured to the lintels of the door-openings and adapted to limit the upward movement of the upper series of door-sections, and means for imposing simultaneous movement in opposite directions to each pair 10 of door-sections, substantially as set forth.

Signed at Chicago, Illinois, this 9th day of June, 1902.

WILLIAM A. CROSS.

Witnesses:

ROBERT BURNS,  
HENRY A. NOTT.