

No. 820,153.

PATENTED MAY 8, 1906.

C. W. TEFFT.
CAR DOOR.

APPLICATION FILED SEPT. 25, 1905.

3 SHEETS—SHEET 1.

FIG. 1.

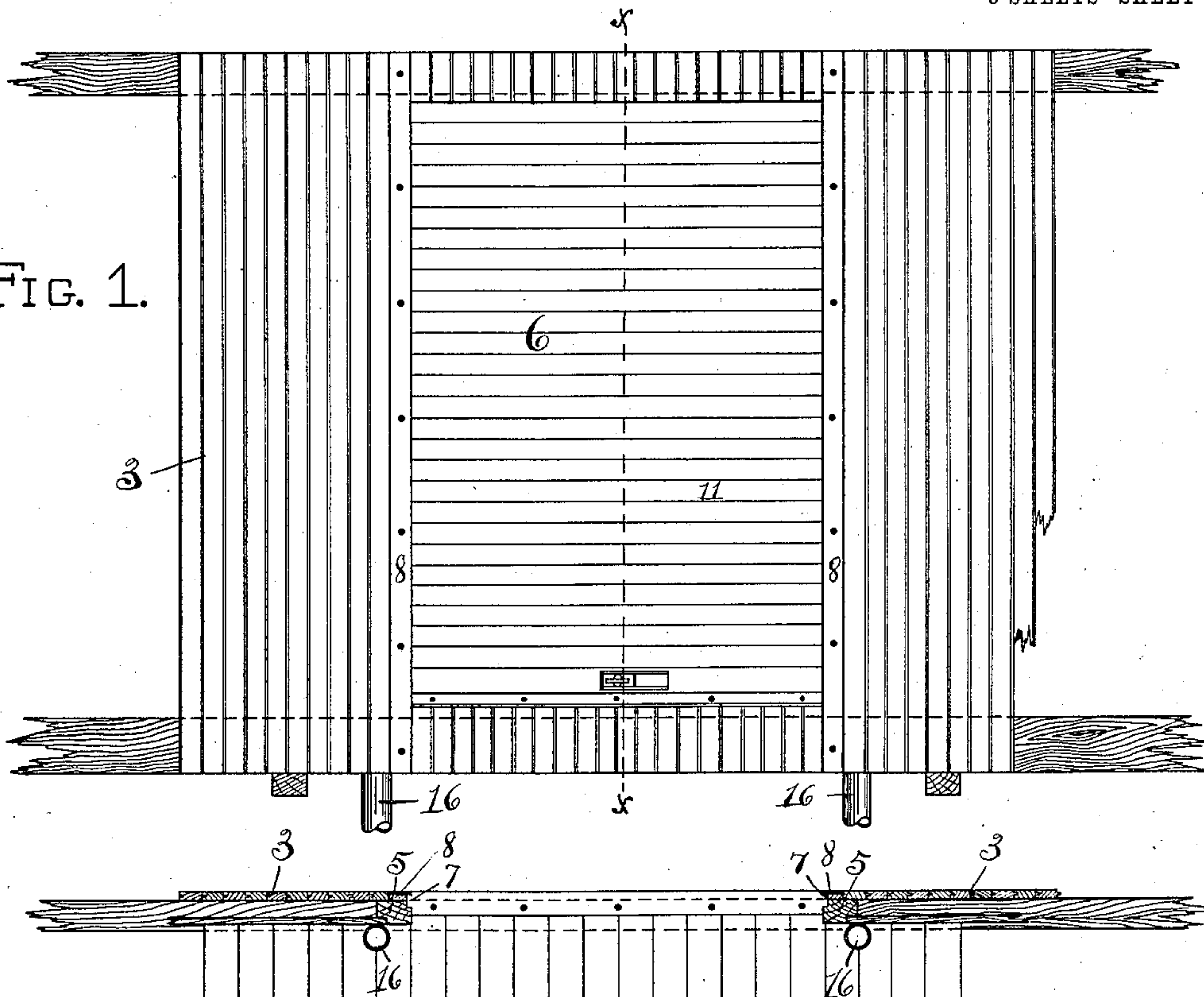
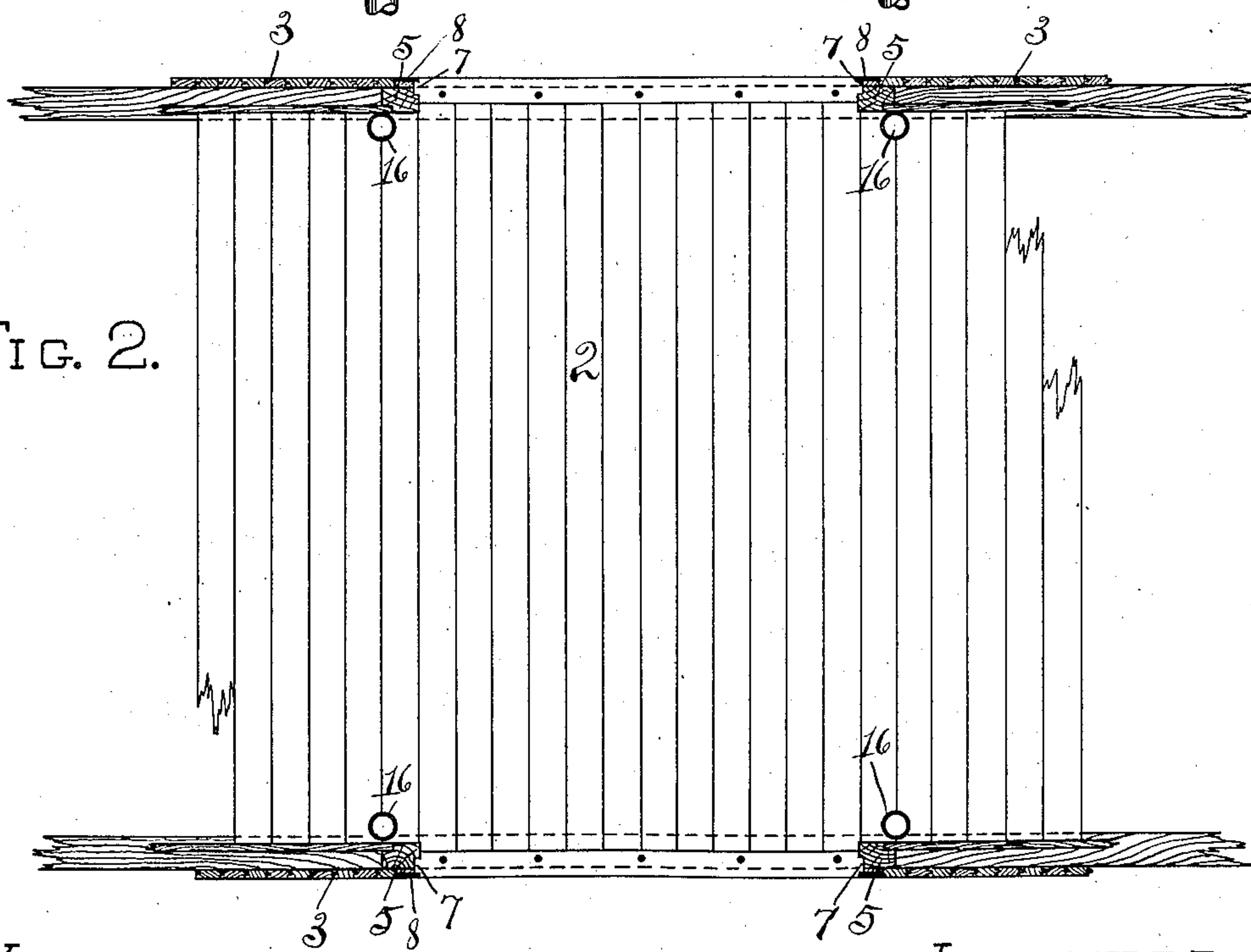


FIG. 2.



WITNESSES.

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3 SHEETS—SHEET 2.

FIG. 3.

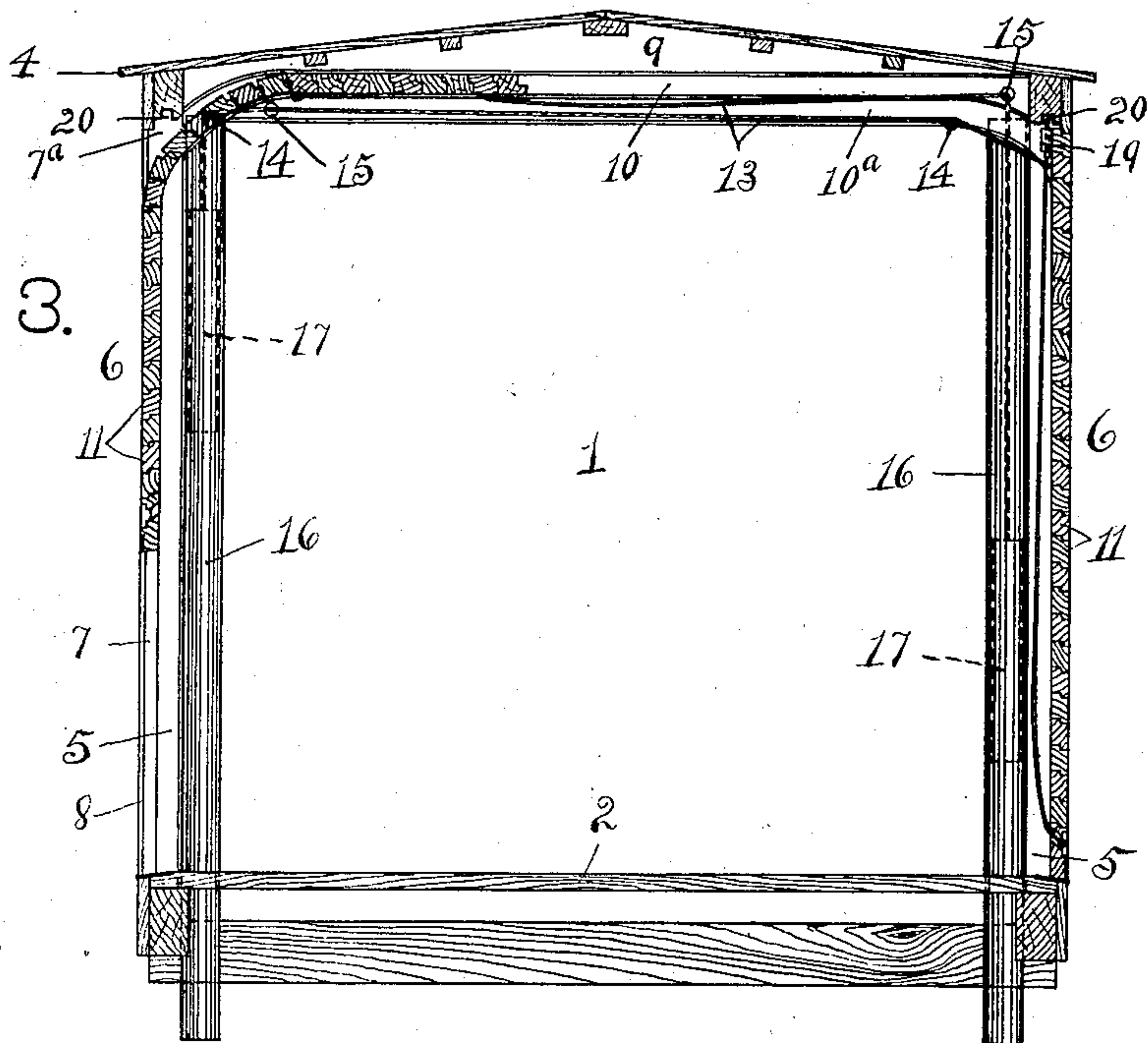


FIG. 4.

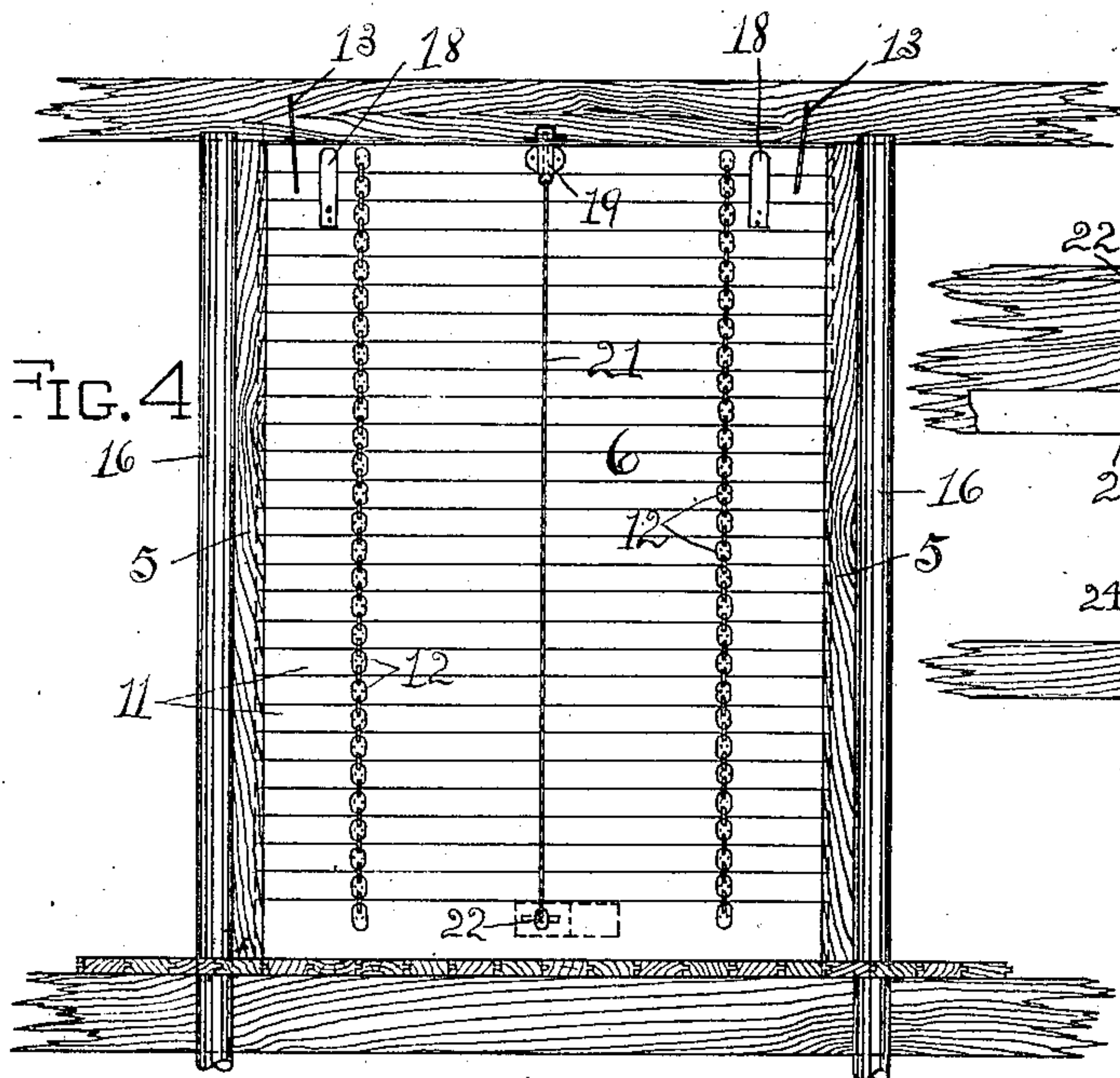


FIG. 5.

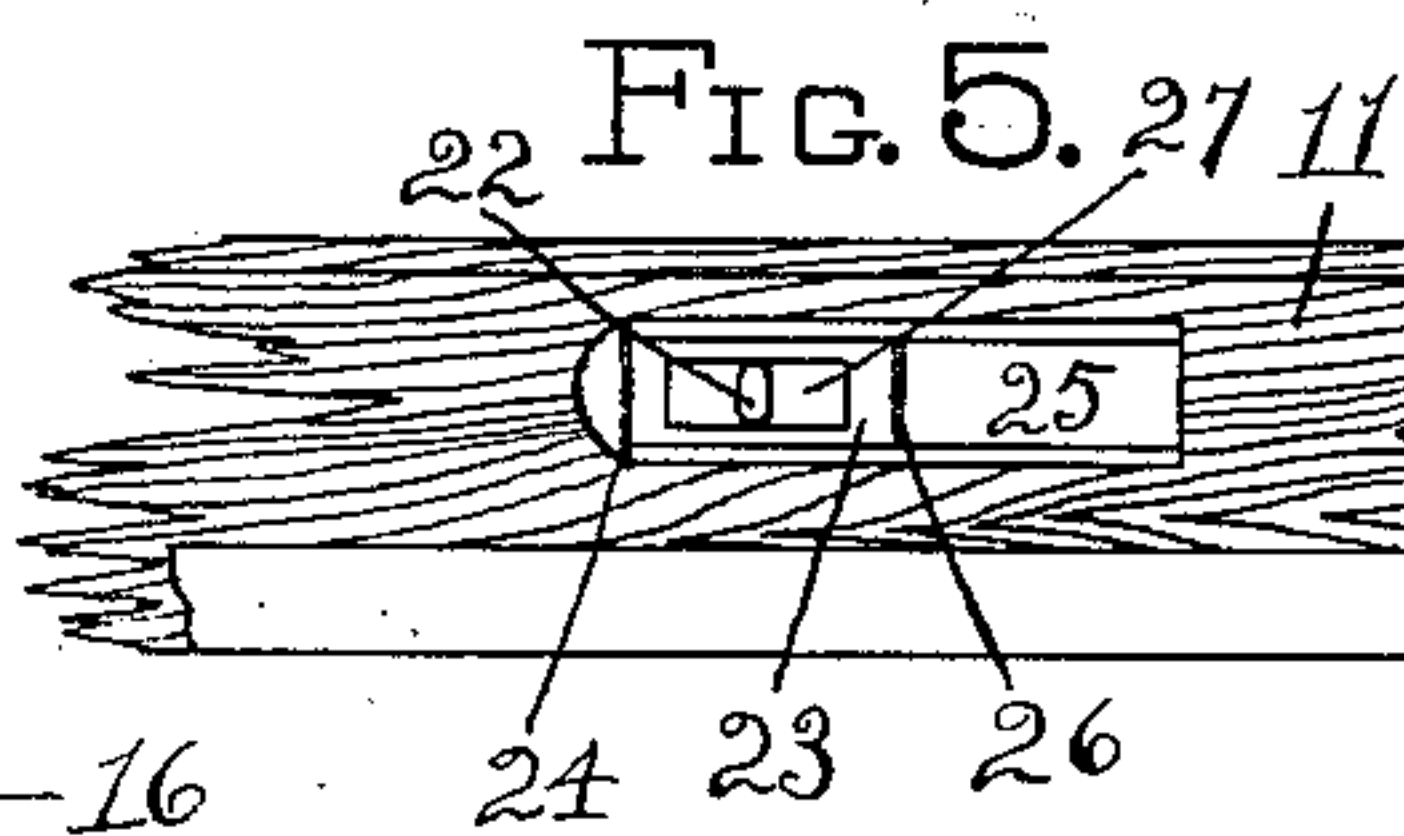


FIG. 6.

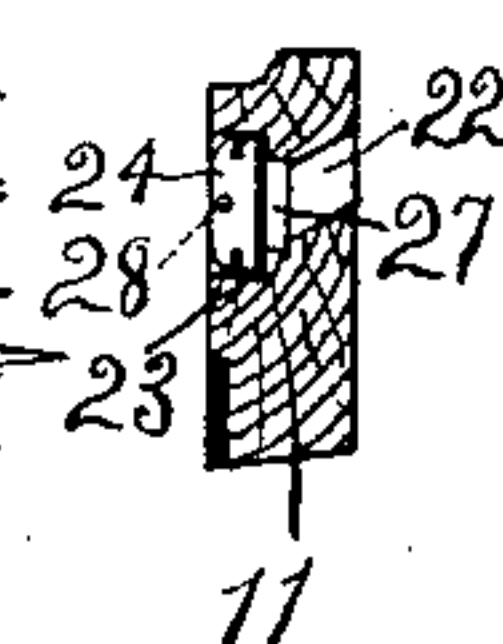
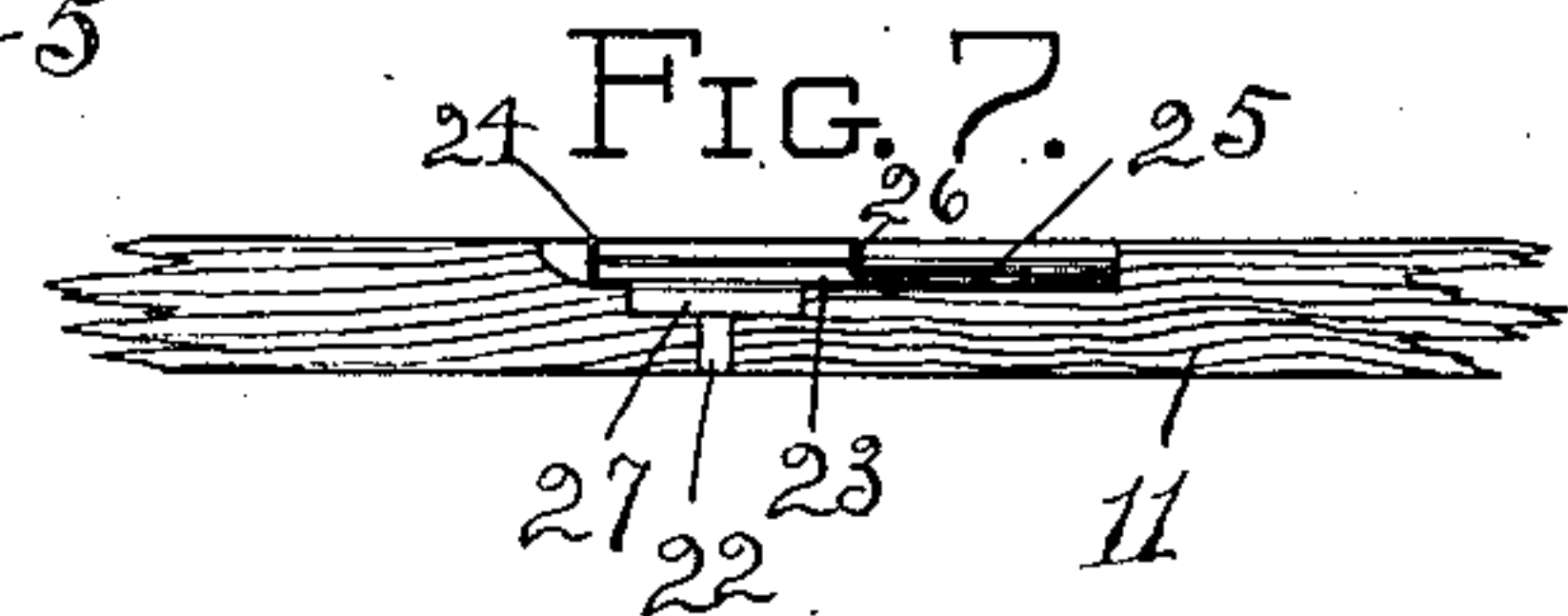


FIG. 7.



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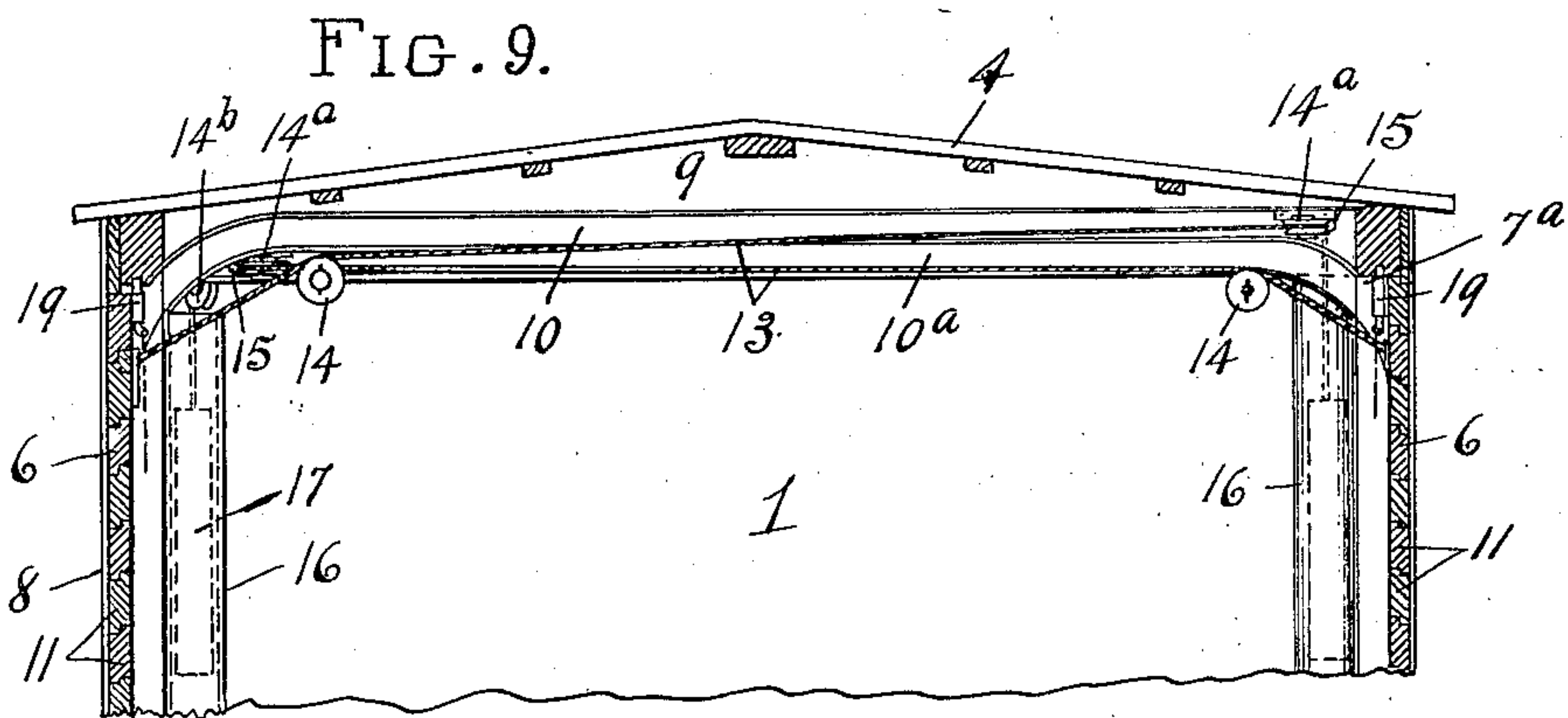
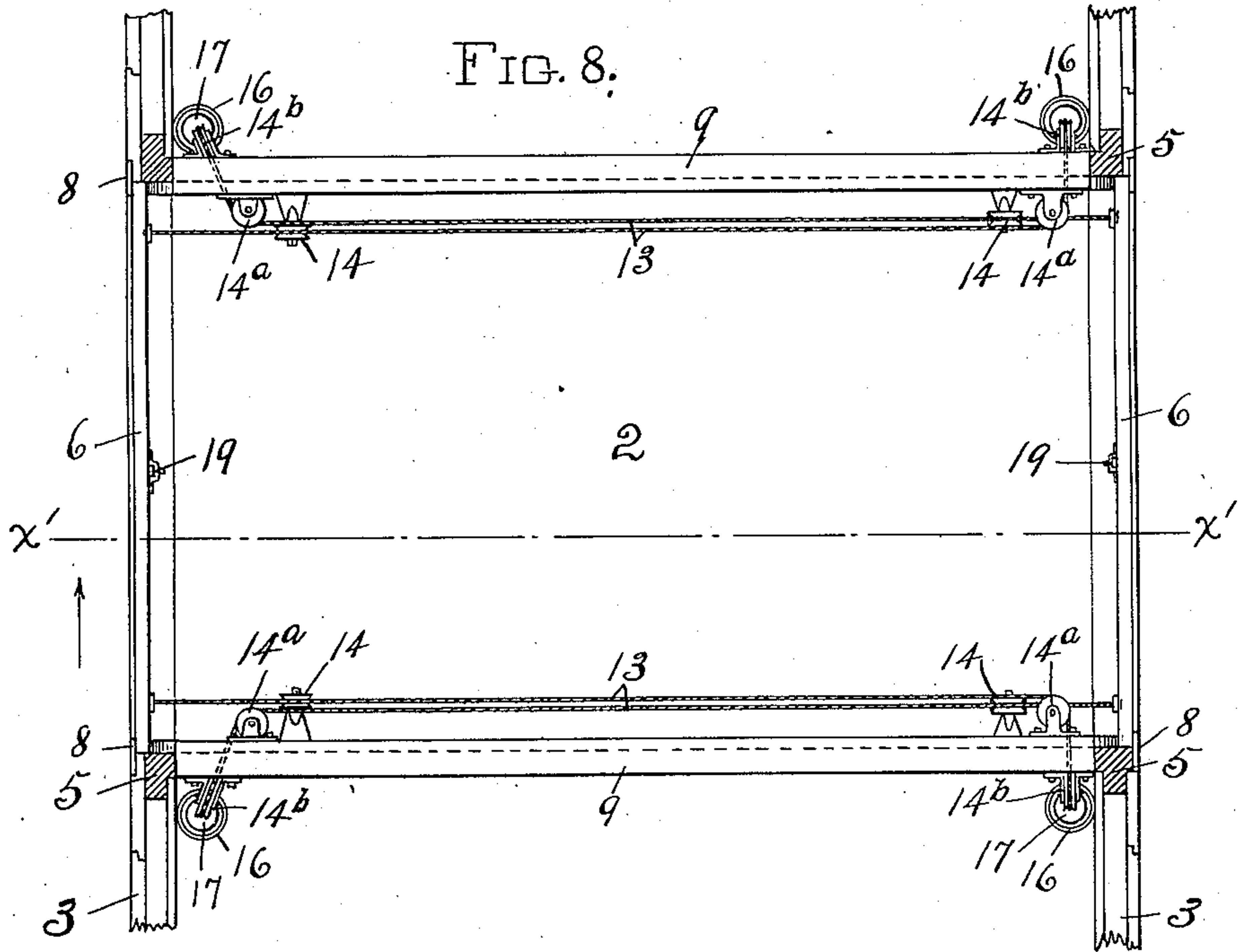
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UNITED STATES PATENT OFFICE.

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CAR-DOOR.

No. 820,153.

Specification of Letters Patent.

Patented May 8, 1906.

Application filed September 25, 1905. Serial No. 279,878.

To all whom it may concern:

Be it known that I, CHARLES W. TEFFT, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Car-Doors; and I 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in car-doors of the class comprising a series of flexibly-connected sections mounted in runways and adapted when opened to be moved up out of the way under the car-roof.

The object of my invention is the provision of a door of this class that is adapted when closed to entirely and tightly close the door-opening and that is provided with means whereby such door may be securely locked at its upper part against movement and such locking means controlled without the door in a manner enabling it to be sealed by the usual car-seal.

The operation, construction, and arrangement of the parts of the invention are fully described in the following specification and shown in the accompanying drawings, in which—

Figure 1 is a side elevation of a portion of a car embodying my invention with the door shown in closed position. Fig. 2 is a horizontal cross-section of a portion of a car, showing the door-openings. Fig. 3 is a vertical cross-section of a portion of a car, taken on the dotted line $x x$ in Fig. 1 and showing one door partially raised and the position of the weight-cable of each door with the guiding-pulleys therefor removed. Fig. 4 is an inner elevation of a door and door-frame comprising my invention. Figs. 5, 6, and 7 are details of the lock-sealing means. Fig. 8 is a top view of the portion of a car including the opposing door-frames and doors with the roof removed to illustrate the course of the weight-cables and the positions of the guiding-pulleys therefor; and Fig. 9 is a vertical cross-section of the upper portion of a car, taken along the dotted line $x' x'$ in Fig. 8 and showing the positions of the guiding-pulleys for the contiguous weight-cables of the two doors.

Referring to the drawings, 1 represents the body or box of a car, of which 2 is the flooring; 3, the sides; 4, the roof; 5, the door-posts, and 6 the doors. Each post 5 is formed with a vertical guide or runway 7, in which the contiguous edge of a door 6 operates as it is raised or lowered. The outer edge or rib of each runway is shown in the drawings as being formed by a metal strip 8, which is straight throughout its length and secured in any suitable manner to the outer side edge of the door-opening. The runways 7 of each door of a car communicate at their upper ends with horizontally-disposed guides or runways formed in or provided on the contiguous faces of the roof-beams 9, which are properly positioned in the car-body for that purpose, one set of runways 7 communicating with a set of runways 10 on said beams and the other set communicating with a set of runways 10^a thereon, as shown in Fig. 3. The runways 10 and 10^a communicate in a curved line with their respective runways 7, the inner shoulder or edge of which latter runways 7 diverge from the strips 8 or outer rib thereof adjacent to the top of the door-opening, as shown, thereby providing a notch or recess 7^a at the upper end of each runway 7.

The doors 6 are each composed of a series of sections 11, flexibly connected together by links or hinges 12 or in any other suitable manner. To the inner face of each door 6, adjacent to the top thereof, and at each side is attached a cable 13, which when the door is closed passes thence over a sheave or pulley 14 on the contiguous roof-beam 9 across to the opposite side of the car, and thence is guided through a transverse or diagonally-disposed opening 15 in the beam 9 by the suitably-positioned pulleys or sheaves 14^a and 14^b, the latter of which directs the cable down into a pipe or weight-socket 16, where it connects with a counterbalance-weight 17, as shown in Figs. 8 and 9. It will thus be seen that the counterbalance-weights of each door operate in sockets disposed on the opposite side of the car thereto in close parallel relation to the door-posts 5 on such side. The pipes or sockets 16 extend from the top of the car to a distance below the floor thereof necessary to accommodate the length of movement of the weights when a door is opened to its fullest extent.

As the curve at the upper end of the inner shoulders or ribs of the runways 7 of each

door would permit the sections 11 of a door which are disposed above the point of commencement of said curves to fall back out of the notches or recesses 7^a at the top of the
 5 runways, I secure one or more flat springs 18 to the section 11 of a door, first squarely abutting the straight inner shoulder or rib of the runways, the free ends of which springs extend upward and abut the rear faces of the
 10 remaining top sections, whereby to normally retain said sections pressed outwardly against the strip 8 of the door-casing and within the notches or recesses 7^a when the door is closed. By this means the door when
 15 closed is normally locked against rising by reason of the top door-section having a direct vertical thrust against the top of the door-frame, as shown as the right of Fig. 3.

In order to prevent the unauthorized opening of a car-door by an inward pressing of the
 20 top sections thereof, thus permitting a raising of the door, a lock 19, having a spring-actuated slide-bolt therein, is secured to the top door-section in position for its bolt to engage an alining notch 20 in the top of the door-casing. This bolt is controlled from
 25 without the car by a cord or wire 21, which is attached at one end to the bolt and has its other end passed through an opening 22 in one of the lower sections of the door and is prevented from withdrawal therefrom by a ring or other suitable enlargement provided
 30 at such end. Countersunk in the outer face of the door-section through which the end of the rope passes and having an opening therein registering with the opening in the door-section is a slideway 23, preferably of metal, having one end turned up to form a lip 24 at
 35 right angles to its body portion. Mounted for movement in the way 23 is a slide 25, which has one end bent at right angles, as shown at 26, to abut against the lip 24 and which is adapted to be moved to open or close access to the recessed portion 27 at the
 40 rear of the opening through the slideway and in which the ring or enlargement at the lower end of the cord 21 is confined when the door is closed. A sealing of the lock against being tampered with by unauthorized persons is
 45 effected by moving the slide 25 to close the opening over the recessed portion 27 and inserting a sealing-wire through apertures 28 in the abutting lips 24 and 26 to prevent an opening of the slide.

55 In the opening of the door comprising my invention the seal is first broken to permit a movement of the slide 25 to uncover the lower end of the cord 21. This being done, the cord is pulled to effect a release of the
 60 bolt in the lock 19 and to draw the top sections of the door inwardly against the pressure of the springs 18 until they are free from the notches or recesses 7^a and bear against the curved surface of the inner shoulders or
 65 ribs of the runways, thereby permitting the

door to be raised to the top of the car. A very light upward pressure on the door is sufficient to raise it, as its weight and the frictional resistance of the runways are counterbalanced by the weights 17. 70

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

1. In a car, a door-frame having runways provided in its sides flush with the outer
 75 edges thereof and continued under the car-roof, said runways each having a break or recess in the outer sides thereof adjacent the top of the door-frame whereby the upper
 80 edge of a door mounted in the runways is enabled when closed to abut the under side of the top of the door-frame flush with its outer edge and completely close the door-opening, a door mounted for movement in said runways and comprising a series of flexibly-connected
 85 sections, and means for normally retaining the top door-sections within the recesses or breaks in the runways and flush with the outer edge of the door-frame.

2. In a car, a door-frame having vertical
 90 runways in its sides, which runways curve inwardly adjacent the top of the door-frame and continue in horizontal position under the car-roof, said runways being formed with an outward recess at their point of curve to enable
 95 the top of a door to abut against the top of the door-frame in flush position with its outer edge, a door mounted for movement in said runways and having its outer face flush with the outer side of the door-frame and
 100 comprising a series of flexibly-connected sections, means for normally retaining the top door-section within the recesses in the runways and in abutment with the under side of the top of the door-frame in flush position
 105 with the outer side of said frame when the door is closed whereby to completely close the door-opening, and means for locking the top door-sections against an inward movement. 110

3. A car-door, comprising a series of flexibly-connected sections of sufficient number to entirely close a door-opening, a door-casing, runways for permitting a raising of the door
 115 to horizontal position directly under the car-roof, said runways having depressions or recesses formed in their outer portion adjacent to the top of the door-opening whereby the upper edge of the top door-section may abut
 120 against the under side of the top of the door-casing and in flush position with its outer surface, means for normally retaining the top door-sections in erect position, and means for counterbalancing the weight of the door as it is raised. 125

4. In a car a door-casing having runways therein which continue under the car-roof, a door mounted for movement in said runways and comprising a series of flexible sections
 130 standing flush with the outer side of the car

when the door is closed, the upper one of which fits closely under the upper portion of the door-casing when the door is closed whereby to completely close the door-opening, means for yieldingly retaining the top door-sections in the said position, and means for locking the top door-sections against an inward movement and consequent opening of the door.

5. In a car, the combination with the door-casing having runways therein for a door to slide in, said runways continuing under the car-roof and having an outward break or recess adjacent the top of the casing and extending thereunder, of a door comprising a series of flexibly-connected sections mounted for movement in said runways and adapted when closed to stand flush with the outer side of the car and to have the top sections thereof seat within the recesses or breaks in the runways and the upper edge of the top section abut the top of the door-casing whereby to completely close the door-opening, means for yieldingly retaining the top door-sections within said recesses or breaks, and means for locking the top door-sections against an inward depression whereby to prevent an unauthorized opening of the door.

6. In a car, a door-frame having runways provided in its sides and continued under the car-roof, said runways having a break or depression in one side thereof adjacent to the top of the door-frame, a door mounted for movement in said runways and comprising a series of flexibly-connected sections, means for normally moving the top door-sections within the depressions or breaks in the runways, and means within the car and controlled from without the same for locking the top sections in such position.

7. In a car, a door-frame, runways provided in said frame and extending under the car-roof, a door movable in said runways and comprising a series of flexibly-connected sections adapted to entirely close the door-opening when the door is in closed position, means within the car at the top of the door for locking it in closed position, and means extending from said locking means and through the lower portion of the door whereby an opening of the door may be effected.

8. In a car, the combination with the door-frame, of guideways provided thereon and diverging from the upper part thereof under the car-roof, a door comprising a series of flexibly-connected sections mounted for movement in said guideways, means within the car for locking the top section of the door in abutment with the top of the door-frame, means without the lower portion of the door for controlling said locking means, and means

for sealing the lock-controlling means against being tampered with.

9. In a car, the combination with the door-frame, of guideways provided therein and continuing therefrom at an angle, a door movable in said guideways comprising a series of flexibly-connected sections the upper one of which abuts against the top of the door-frame when the door is closed, a top lock on the door for locking the uppermost sections thereof to the door-frame, a cord or the like for operating said lock having one end extended through the bottom of the door.

10. In a car, the combination with the door-frame, of guideways provided therein and continuing therefrom at an angle, a door movable in said guideway comprising a series of flexibly-connected sections the upper one of which abuts against the top of the door-frame when the door is closed, a top lock on the door for locking the uppermost sections thereof to the door-frame, a cord or the like for operating said lock having one end extended through the bottom of the door, and means without the door for sealing the end of the cord.

11. In a car, the combination with the door-frame, of guideways provided therein and continuing at an angle from the upper part thereof, a flush door movable in said guideways comprising a series of flexibly-connected sections the upper one of which normally abuts against the under side of the top of the door-frame when the door is closed whereby to prevent a raising of the door, and means controlled from without the car for locking the top door-sections against lateral movement relative to the door-frame.

12. A door-casing having vertical guideways in its sides, which guideways continue at an angle from the upper part of the casing, a door comprising a series of flexibly-connected sections mounted in said guideways with its outer surface in substantially flush position with the outer side of the casing when in closed position and having its upper section normally in abutment with the under side of the top of the casing in vertical alinement with its major portion whereby a raising of the door is prevented except when the top section is pressed inwardly, and means for locking the top door-section against such inward depression.

In testimony whereof I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

CHARLES W. TEFFT.

Witnesses:

WILBER A. OWEN,
JOHN BILLETER.