

O. RICHARDS.

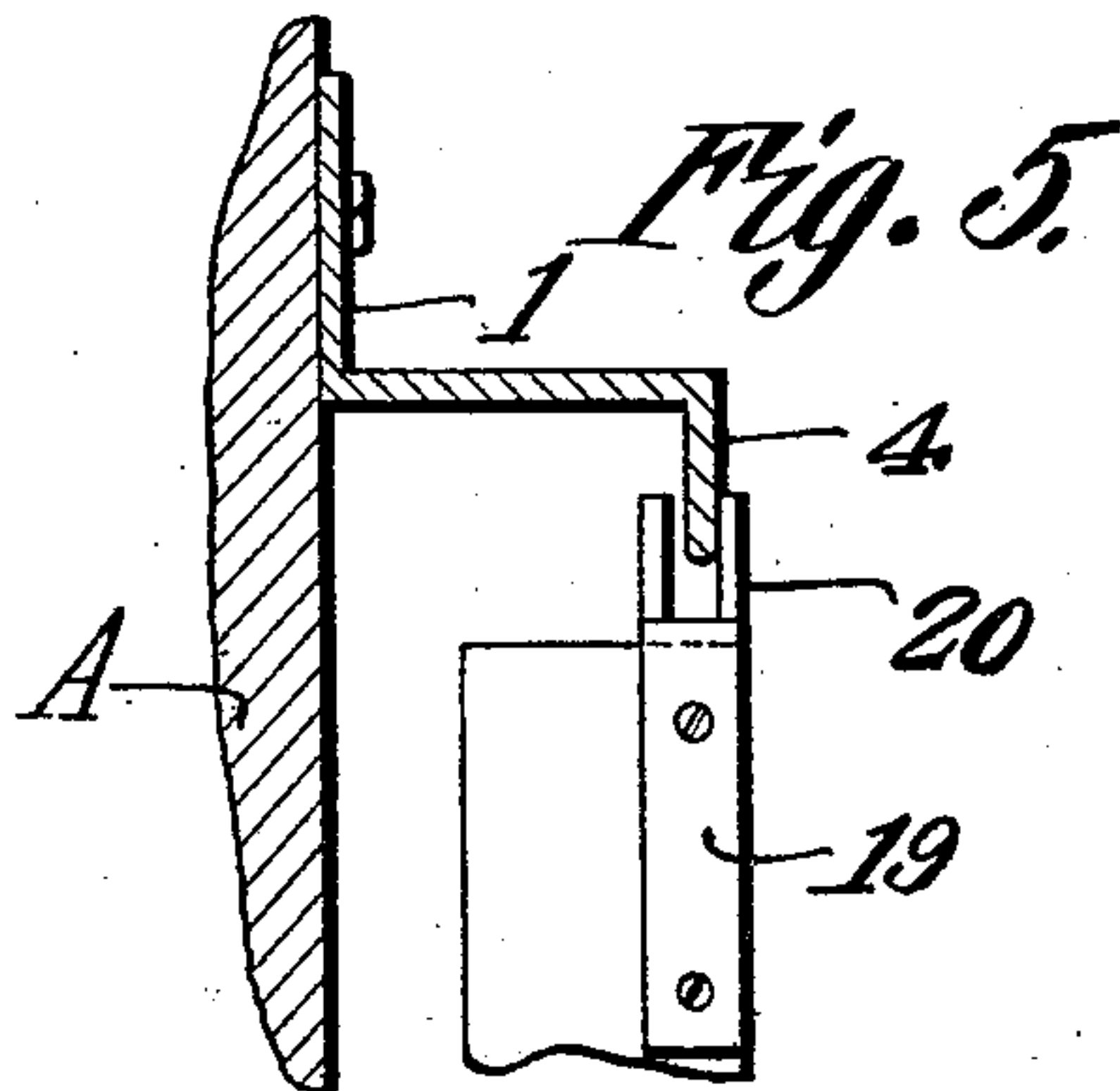
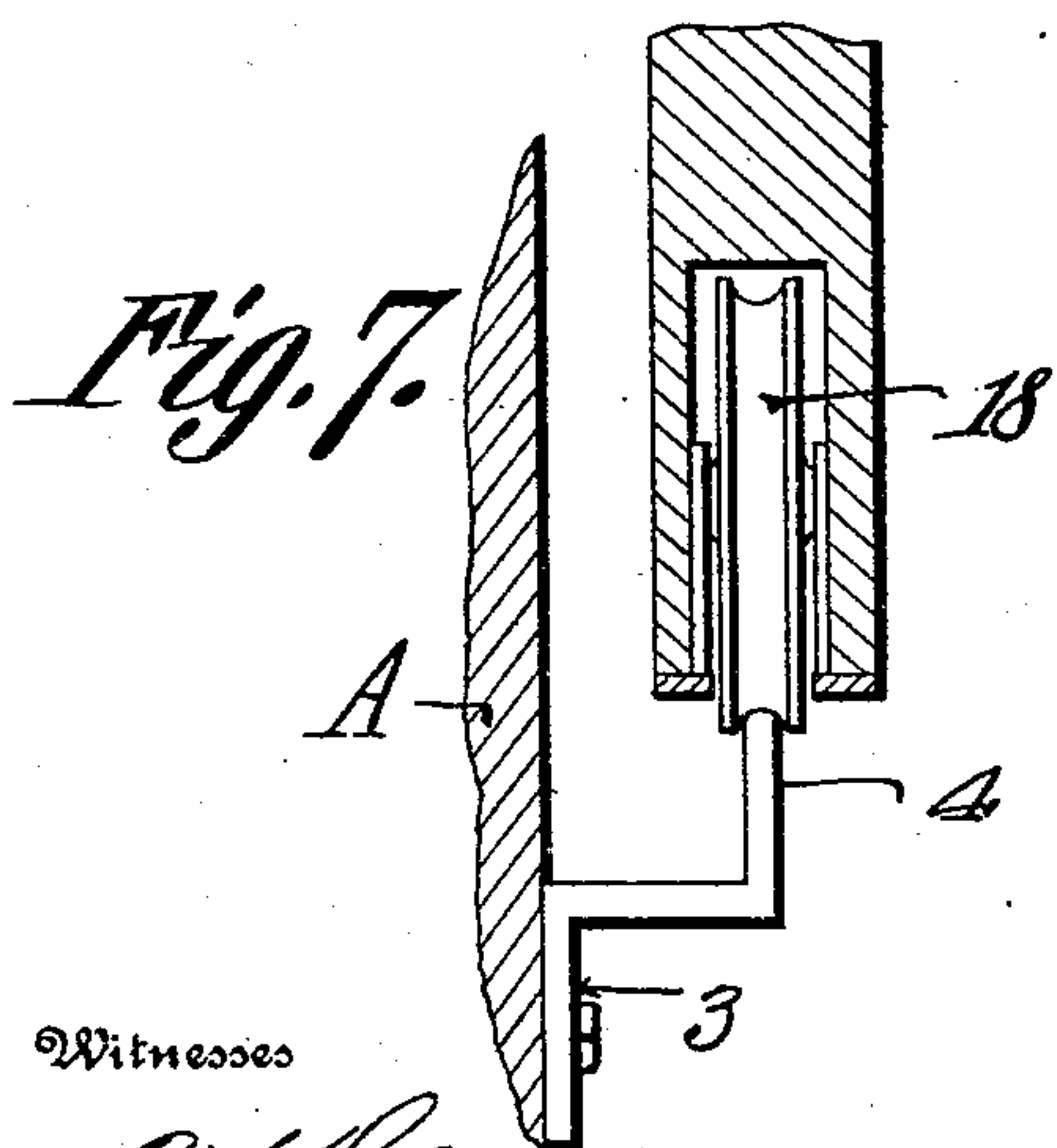
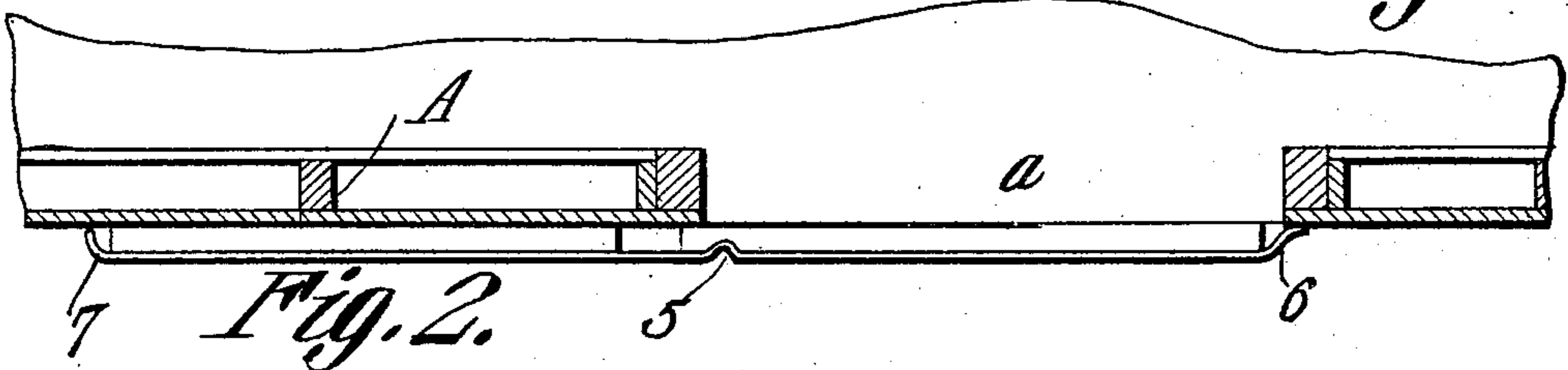
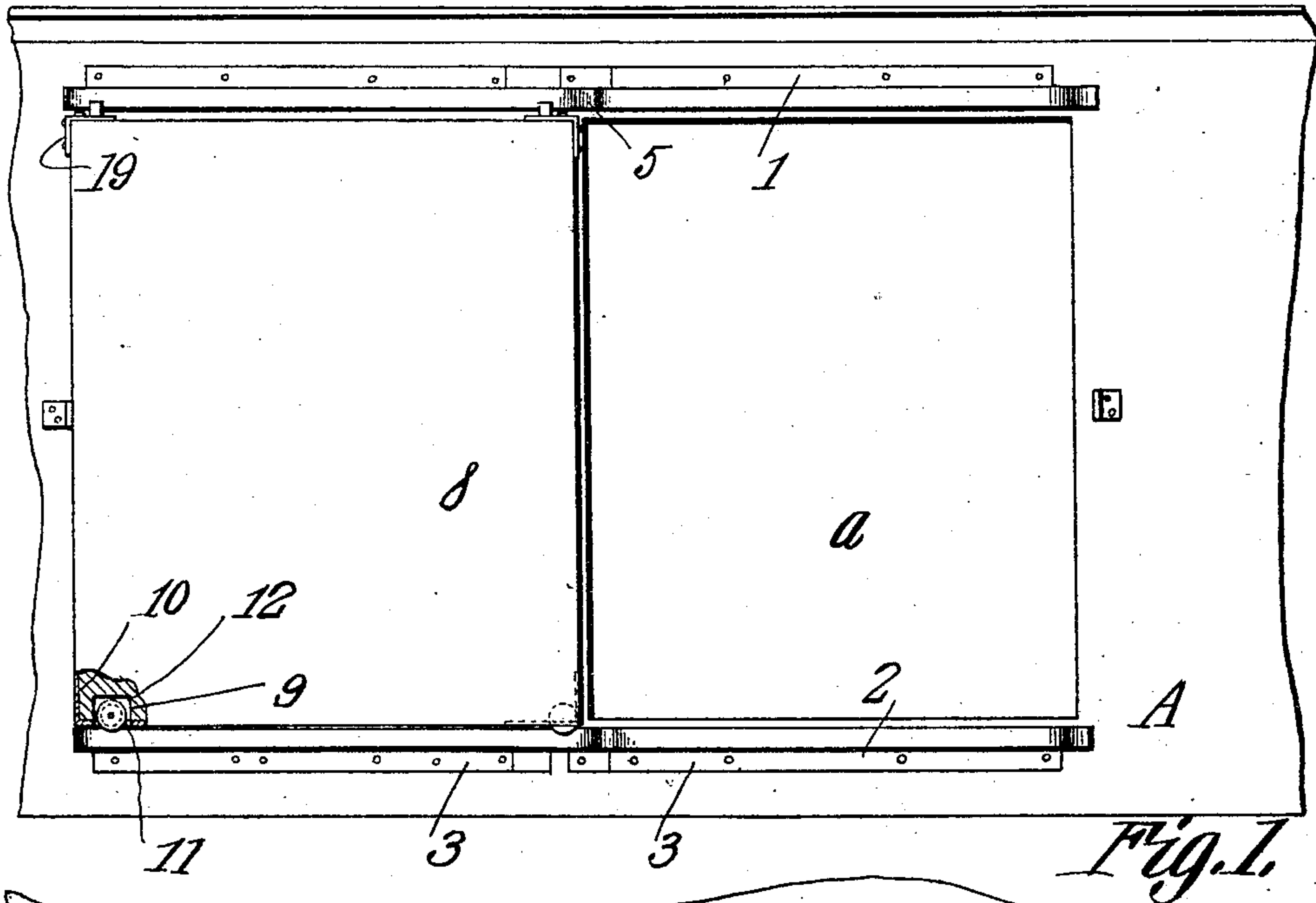
SLIDING DOOR.

APPLICATION FILED MAR. 29, 1909.

969,192.

Patented Sept. 6, 1910.

2 SHEETS—SHEET 1.



Witnesses

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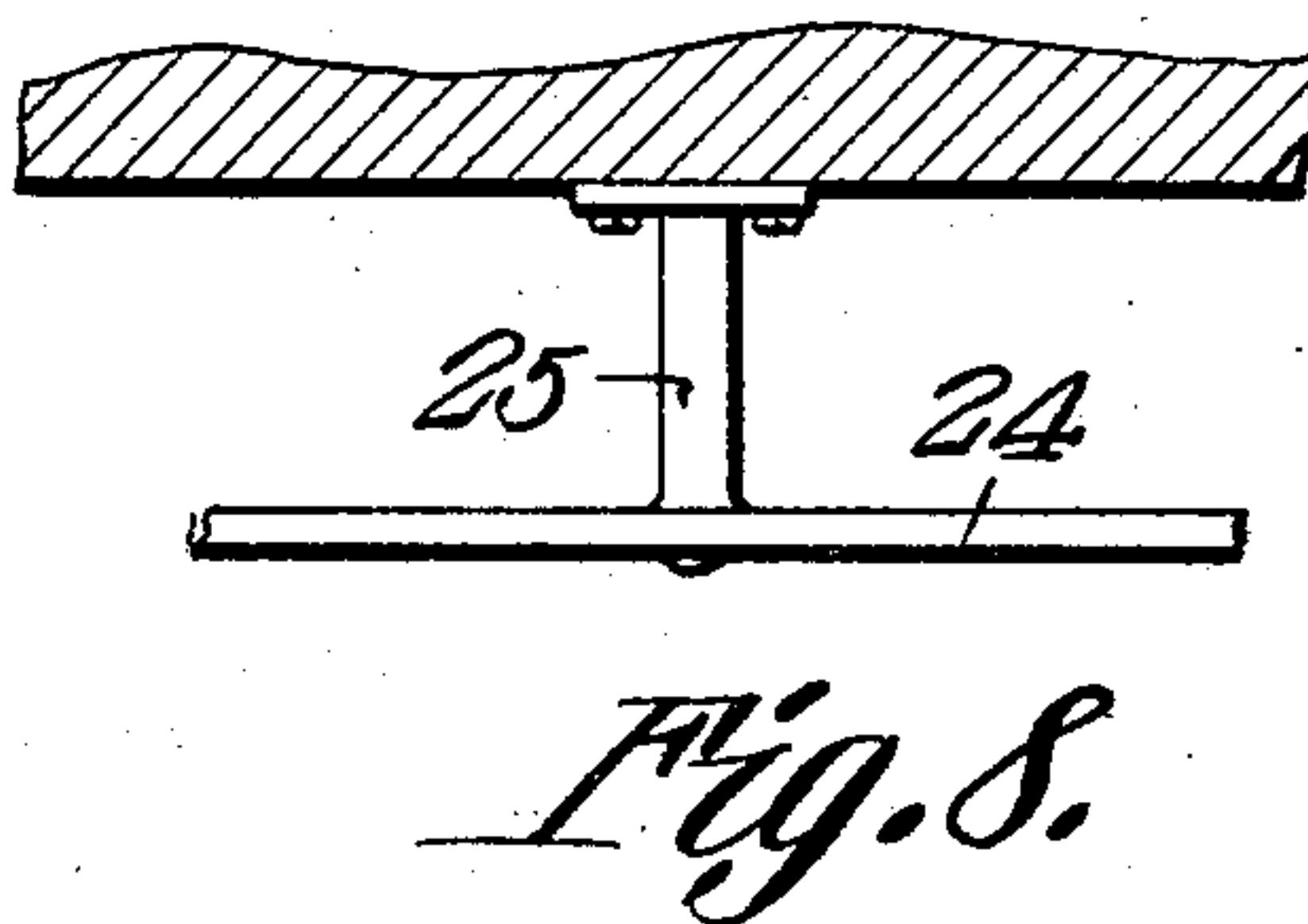
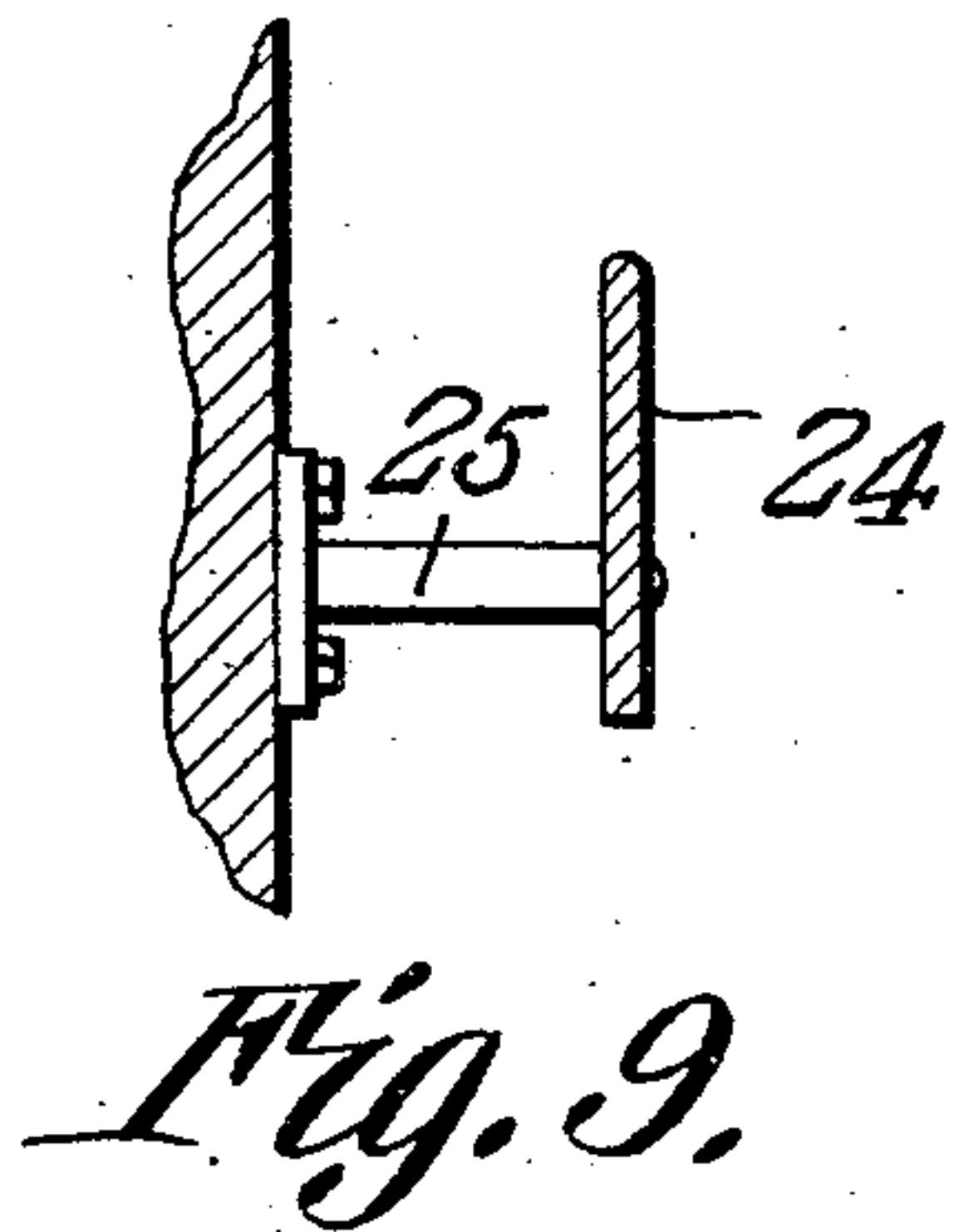
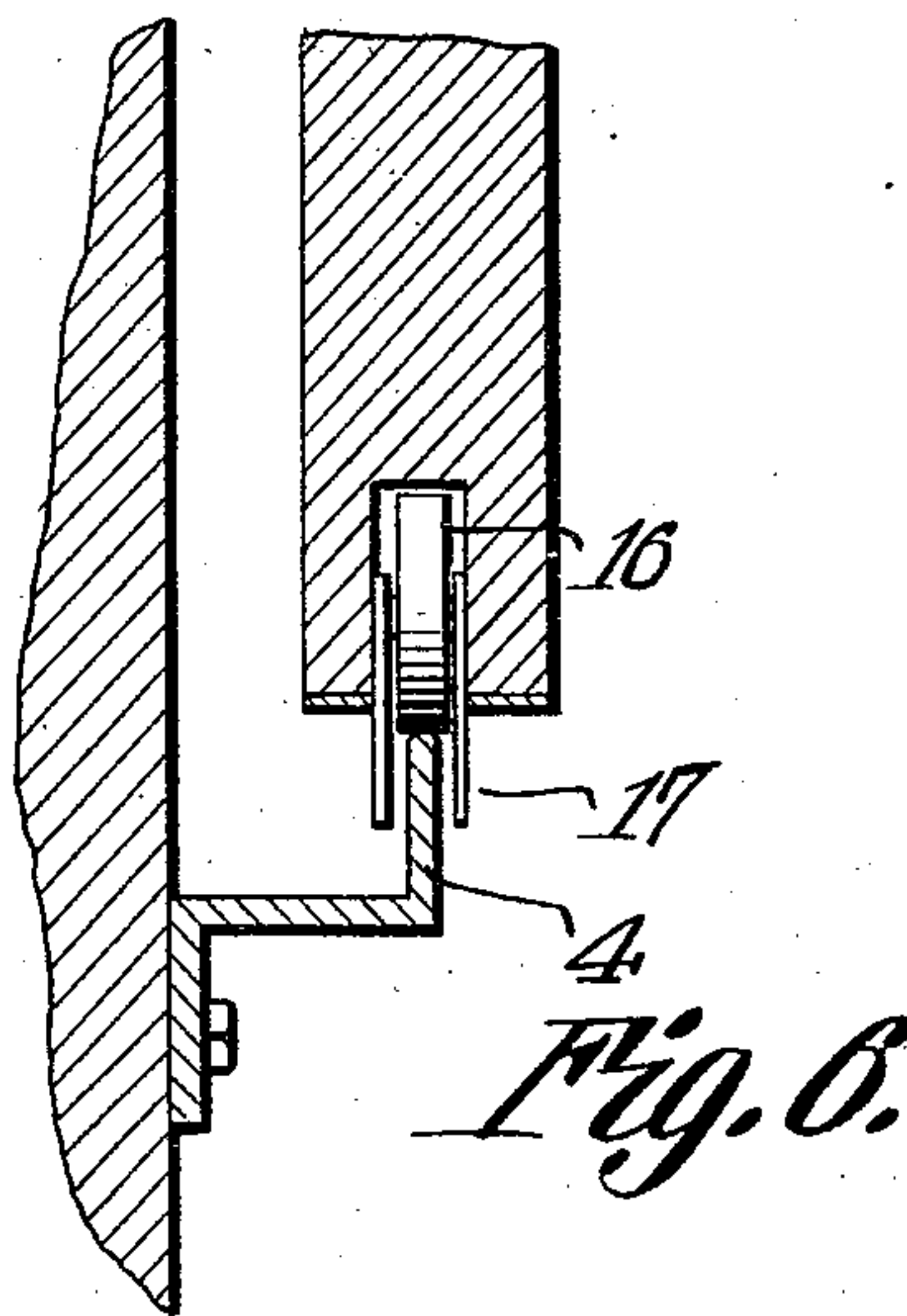
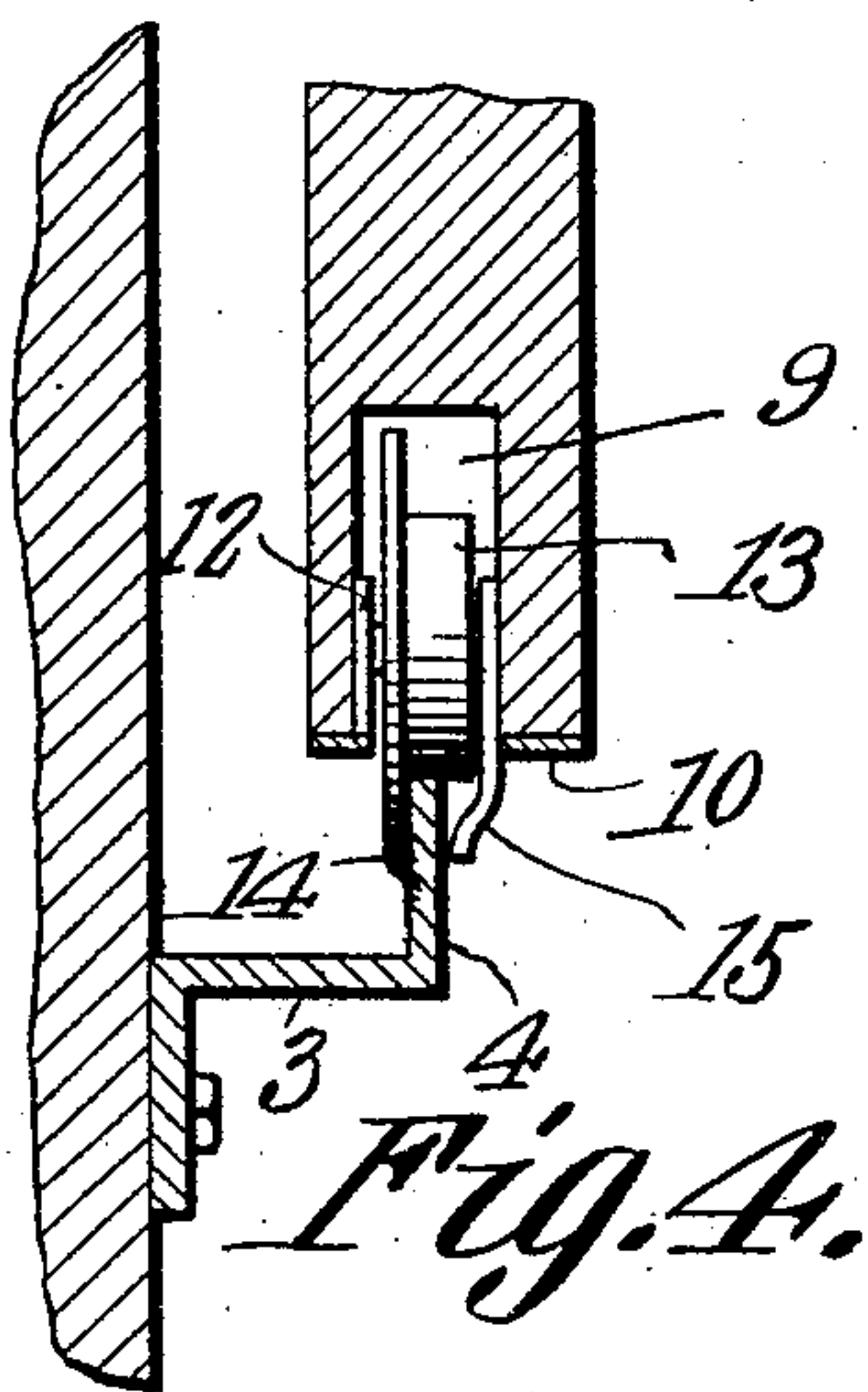
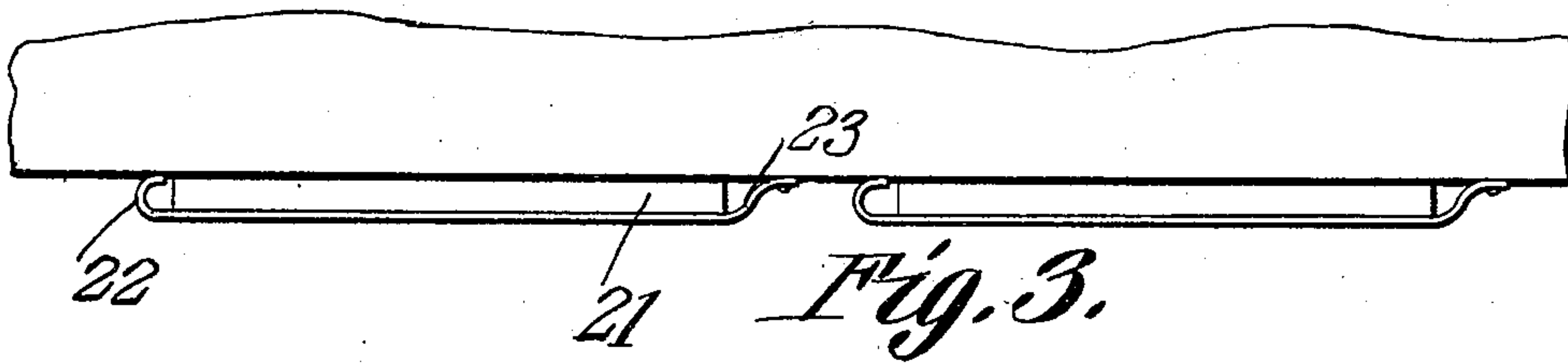
Attorneys

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2 SHEETS—SHEET 2.



Witnesses

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# UNITED STATES PATENT OFFICE.

ORLANDO RICHARDS, OF BRISTOL, WISCONSIN.

## SLIDING DOOR.

969,192.

Specification of Letters Patent.

Patented Sept. 6, 1910.

Application filed March 29, 1909. Serial No. 486,435.

*To all whom it may concern:*

Be it known that I, ORLANDO RICHARDS, a citizen of the United States, residing at Bristol, in the county of Kenosha and State of Wisconsin, have invented a new and useful Sliding Door, of which the following is a specification.

This invention relates to sliding doors for use upon cars, barns and other structures and has reference more particularly to a track designed to direct the door into the door opening while said door is being moved to closed position, and for guiding the door out of and to one side of the opening when moved in the reverse direction. Its object is to provide a structure of this character which is compact and durable, easy to operate, and in which the door cannot become derailed.

With these and other objects in view the invention consists in certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claim.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a side elevation of a portion of a structure having the present improvements applied thereto, the door being shown open and a portion thereof being in section. Fig. 2 is a plan view of the lower track shown in Fig. 1, the structure being shown in horizontal section and the door being removed. Fig. 3 is a plan view of a modified form of lower track, the door being removed therefrom. Fig. 4 is an enlarged vertical transverse section through the lower track and the lower portion of the door, one of the rollers being shown in elevation. Fig. 5 is a similar view through the upper track showing the upper portion of the door in elevation. Fig. 6 is a view similar to Fig. 4, showing a modified form of roller. Fig. 7 is a view similar to Fig. 4, showing another modified form of roller. Fig. 8 is a plan view of a portion of a modified form of track. Fig. 9 is a transverse section therethrough.

Referring to the figures by characters of reference A designates the wall of a car, building or the like, the same being provided with a door opening *a*. Secured to the wall above and below the opening are tracks 1 and 2 respectively, the track 2 consisting of alining spaced angle irons 3 each

of which is provided at its outer longitudinal edge with an upstanding flange or rail 4, the adjoining ends of the rails of the two angle irons being connected by an inwardly bowed or curved strip 5 constituting a continuation of the upper edges of the rails 4. This connecting strip is disposed directly below one side of the door opening and that portion of the angle iron 3 located below the opposite side of the door opening has a curved tongue extension 6 projecting from its rail inwardly against the wall A, said curved extension being parallel with a portion of the connecting strip 5 heretofore referred to. The other angle iron 3 extends beyond the side of the door opening and its rail 4 terminates at its far end in a hooked extension 7 constituting a stop for the door traveling upon the track. The upper track 1 is similar in all respects to the lower track 2, with the exception that the flanges or rails of the angle irons extend downwardly instead of upwardly.

The door 8 has recesses 9 in the lower edge thereof adjacent the corners, and secured upon the lower corners of the door are L-shaped brackets 10 provided in their lower portions with slots from the side of which rise parallel ears 12 which project into the recesses 9. As shown in Fig. 4 a roller 13 is mounted on pivots between the ears of each pair, these being inserted into the bottom of the door 9 and said roller projecting a short distance below it so as to travel upon the rails 4 of the lower angle irons and also upon the strips 5 and 6 which constitute continuations thereof. An annular flange 14 is formed upon the roller and is designed to extend between the rails 4 and the wall A and a retaining tongue 15 preferably extends downwardly from each of the brackets 10 and is designed to lap the outer faces of the rails 4 so as to prevent the door from being displaced inwardly.

If preferred, and as shown in Fig. 6, the roller 16 may be formed without flanges and retaining tongues 17 may be employed, extending downwardly from the bracket so as to lap both faces of the rails 4.

Another form of roller has been shown in Fig. 7, this roller being provided with an annular groove 18, designed to receive the upper edge of the rails 4. With this structure it will of course be unnecessary to utilize any retaining tongues or tongue, but I prefer the form shown in Fig. 4 with one



rigid flange and one tongue. The intumed ears 12 extend to both sides of the roller where it is housed within the lower edge of the door and protected from the elements, and they serve as wear plates to prevent twisting of the roller within its bracket when a bend in the track is reached. At this time the tongue 15 is serviceable to prevent derailment, especially when the door is moved forcibly and quickly.

Secured upon the upper edge of the door 8 at each corner thereof is an angular bracket 19 having upstanding spaced ears 20 thereon and these ears are designed to lap opposite faces of the rail of the upper tracks, as shown in Fig. 5, thus preventing lateral displacement of the upper portion of the door.

Instead of forming each track of two angle irons connected by an integral curved strip as in Figs. 1 and 2, said lower track can be formed of separate similar members, each consisting of an angle iron 21, having a hooked stop extension 22 at one end while a curved tongue 23 extends from the other end thereof. The two sections of the track are designed to be arranged with their rails in alinement as indicated in Fig. 3. It is of course to be understood that where this form of lower track is used the upper track is similar thereto.

When the door 8 is open the rollers thereof bear upon the lower rail and the guide ears 20 engage the rails of the upper track, said rollers and ears thus serving to hold the door out of contact with the wall A.

To close the door it is merely necessary to push it longitudinally, and the rollers thereof will travel along the rail 4 and will simultaneously come into contact with the curved strip 5 and the tongue 6 and these will serve to deflect the door inwardly into the opening *a*. Where the track is constructed as shown in Fig. 3 the tongues 23 will operate in this manner. To open the door it is only necessary to reverse the operation when the door will first move out of the door opening *a* and then along the rails until the extreme outer end contacts with the stop extension 7 or 22. During this operation, just at the time the rollers engage

the curve 5 and tongue 6 in the movement of the door either way, a tendency to derailment is resisted in one direction by the flange 14 (or the inner tongue 17) and in the other direction by the outer tongue; and as the top of the door is simultaneously moved in the same direction there is no tendency to swing the door out of a vertical plane which might throw the rollers from their tracks. Hence my construction provides for rails having sharp bends, yet without the necessity for swiveled rollers; but the ones I have employed are well housed and protected from snow, rust, and dirt.

If desired, and as shown in Figs. 8 and 9, each track may consist of an elongated strip of metal such as indicated at 24, the same being attached to the wall by a series of brackets 25.

Obviously various changes may be made in the construction and arrangement of the parts without departing from the spirit or sacrificing the advantages of the invention.

What is claimed is:—

The combination with a structure having a door opening, and parallel rails disposed above and below the opening and extending to one side thereof, each of said rails provided close to one side of the doorway with a curved portion extending toward the structure and its terminals being curved and secured to the structure; of a door interposed between the rails, flanged rollers housed in its lower corners and projecting below it so as to travel on the lower rail, said rollers being spaced apart a distance equal to the distance between each curved terminal portion of the rail and the intermediate curved portion thereof, retaining tongues depending from the door and lapping the lower rail on the opposite side thereof from the flanges of said rollers, and means carried by the top of the door for slidably engaging the upper rail.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ORLANDO RICHARDS.

Witnesses:

FLORENCE INA POSTLETHWAITE,  
P. C. TORREY.