

(No Model.)

A. B. ALLEN.

RAILWAY CAR.

No. 260,920.

Patented July 11, 1882.

Fig 1

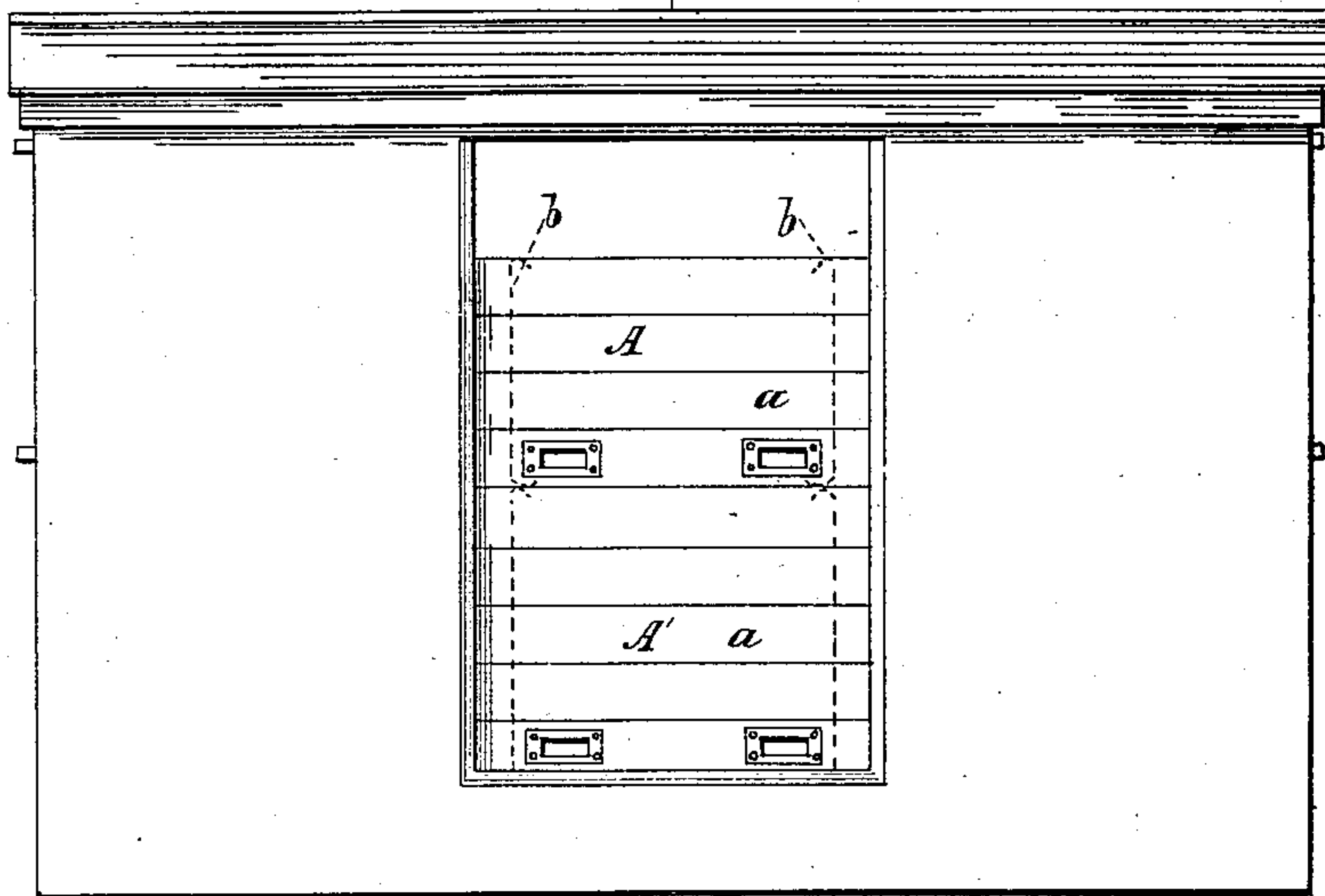


Fig 2

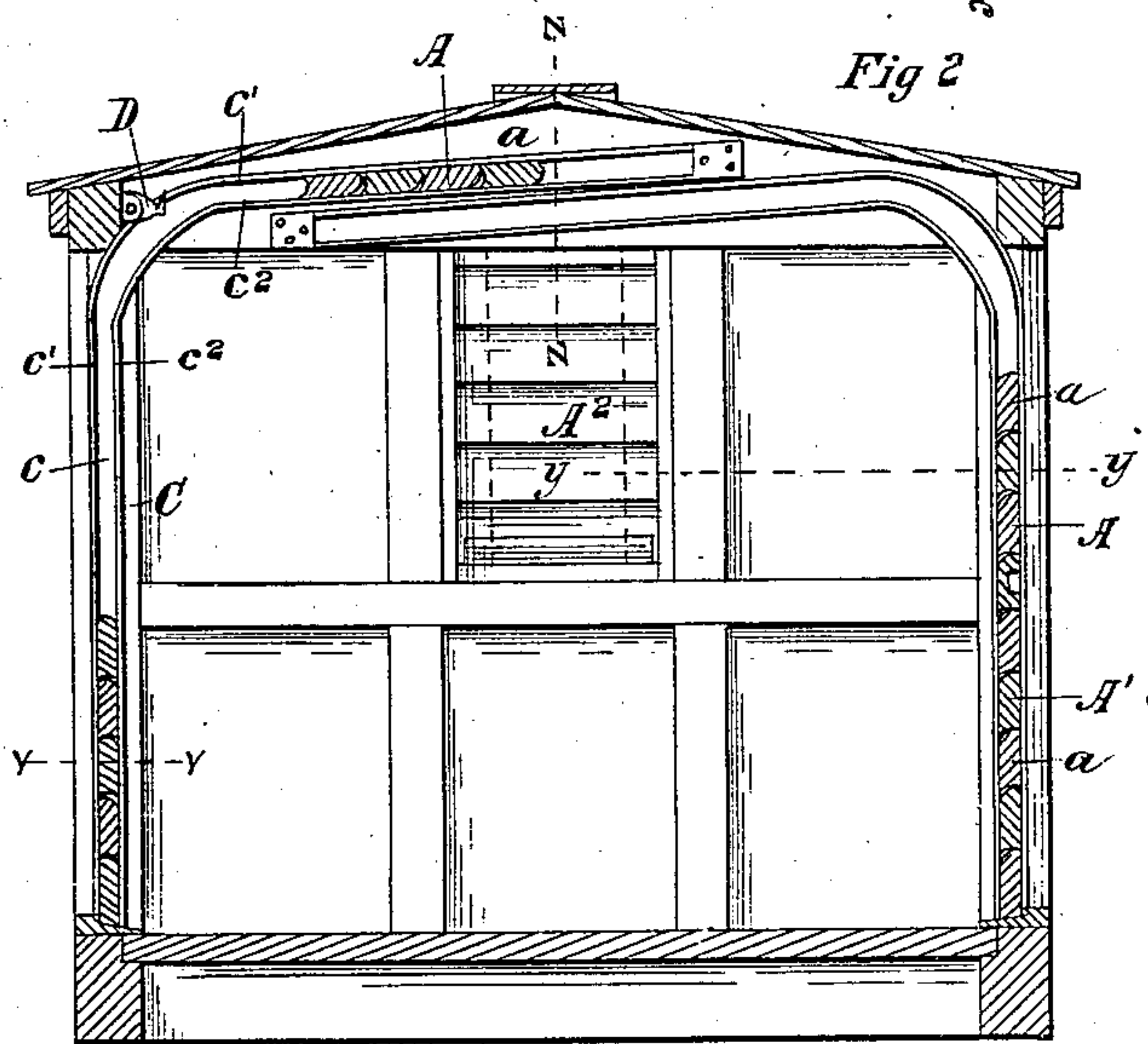


Fig 3

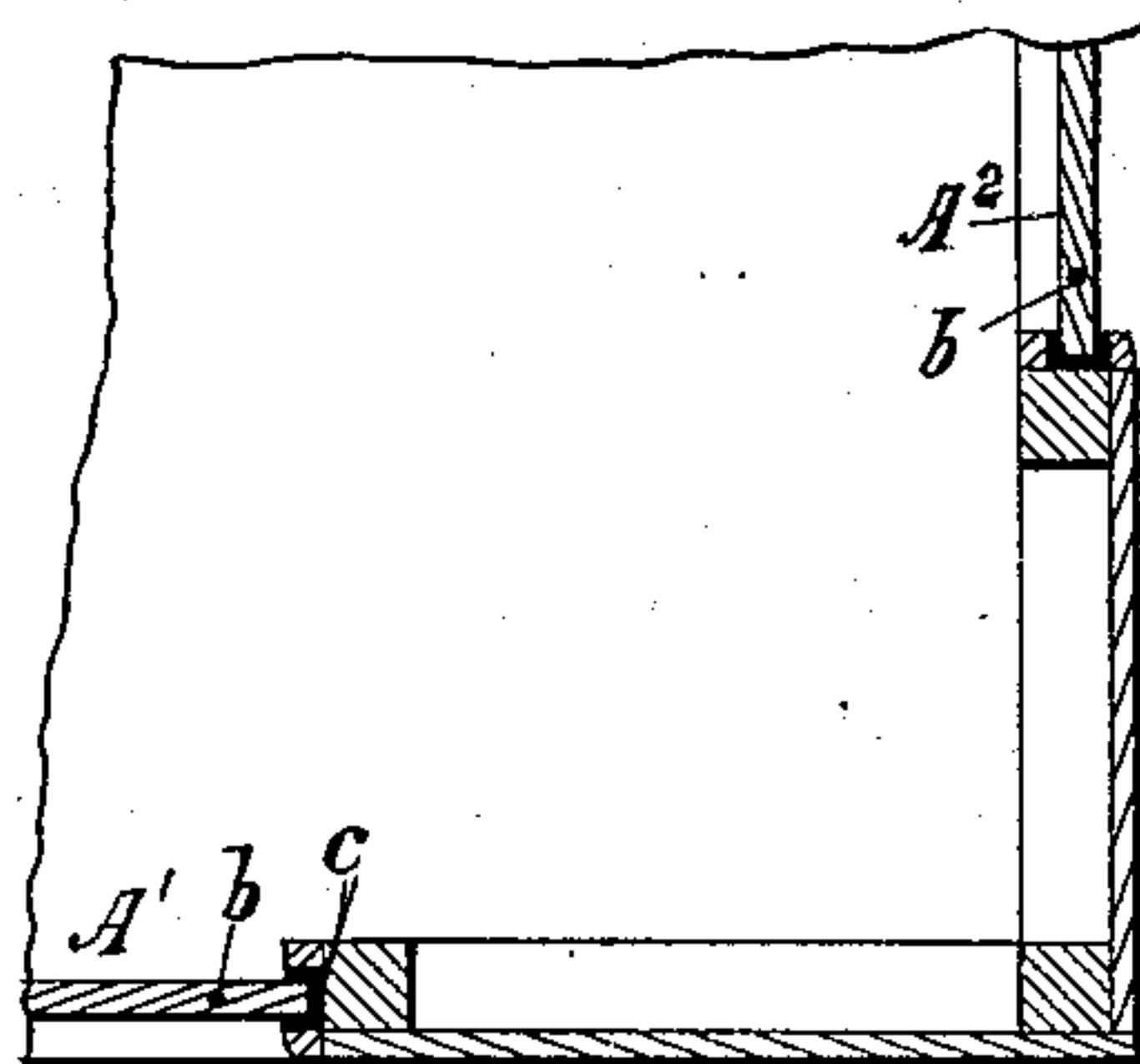


Fig 4

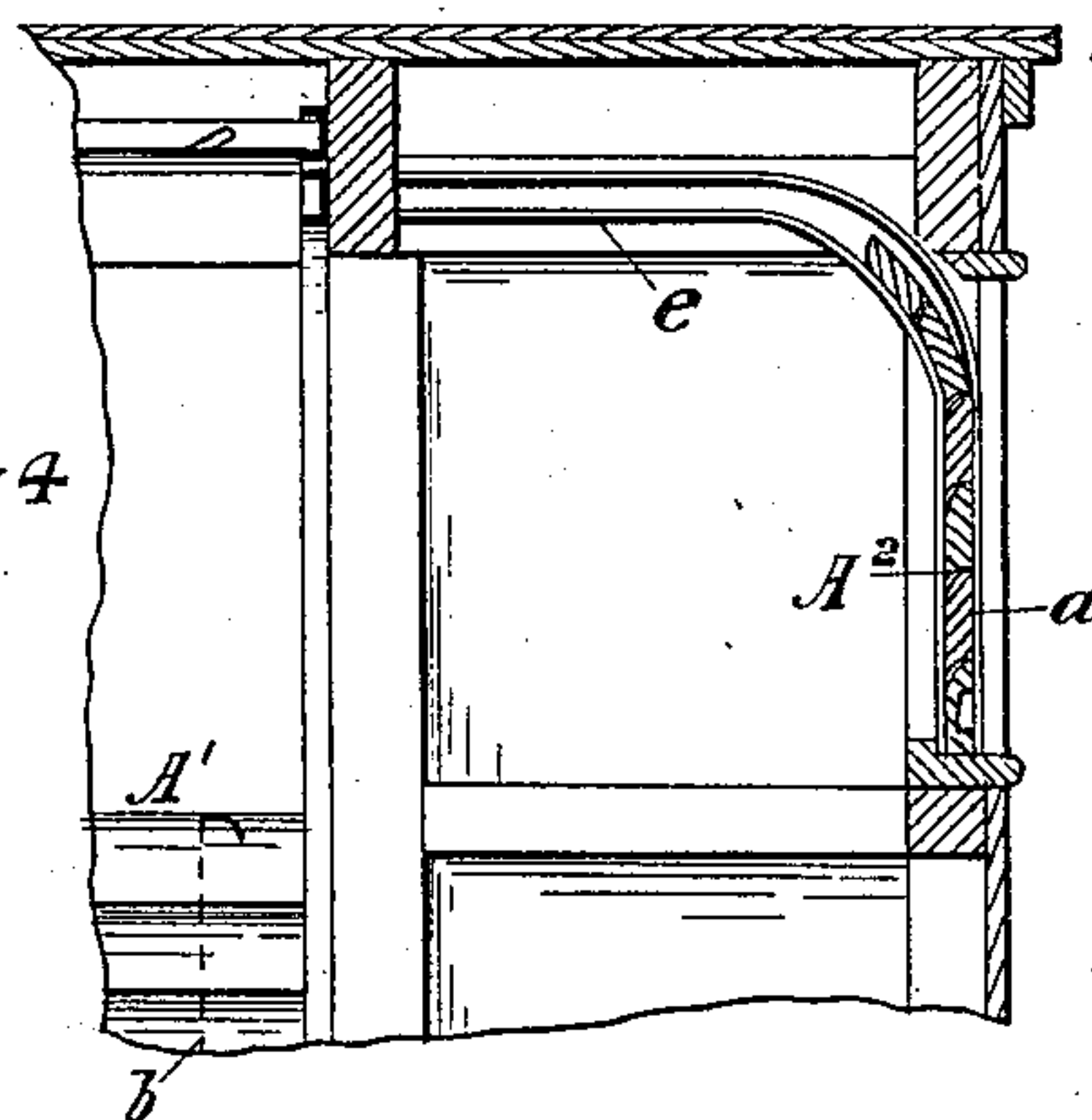


Fig 5

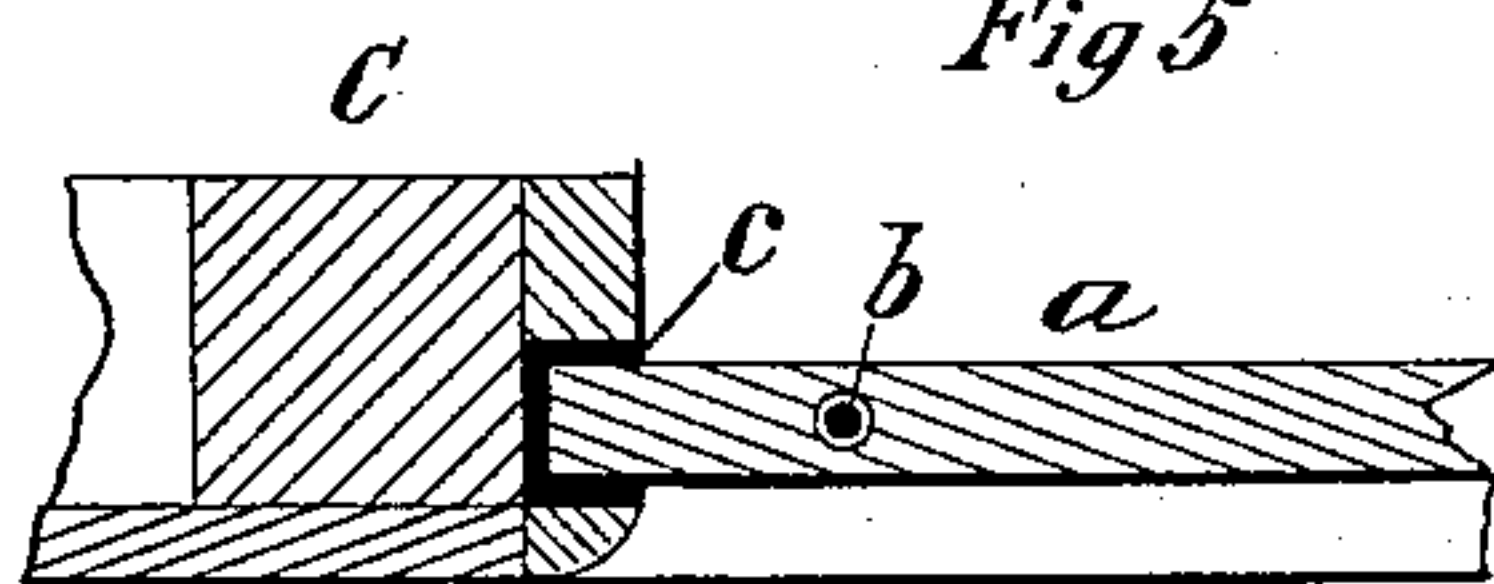
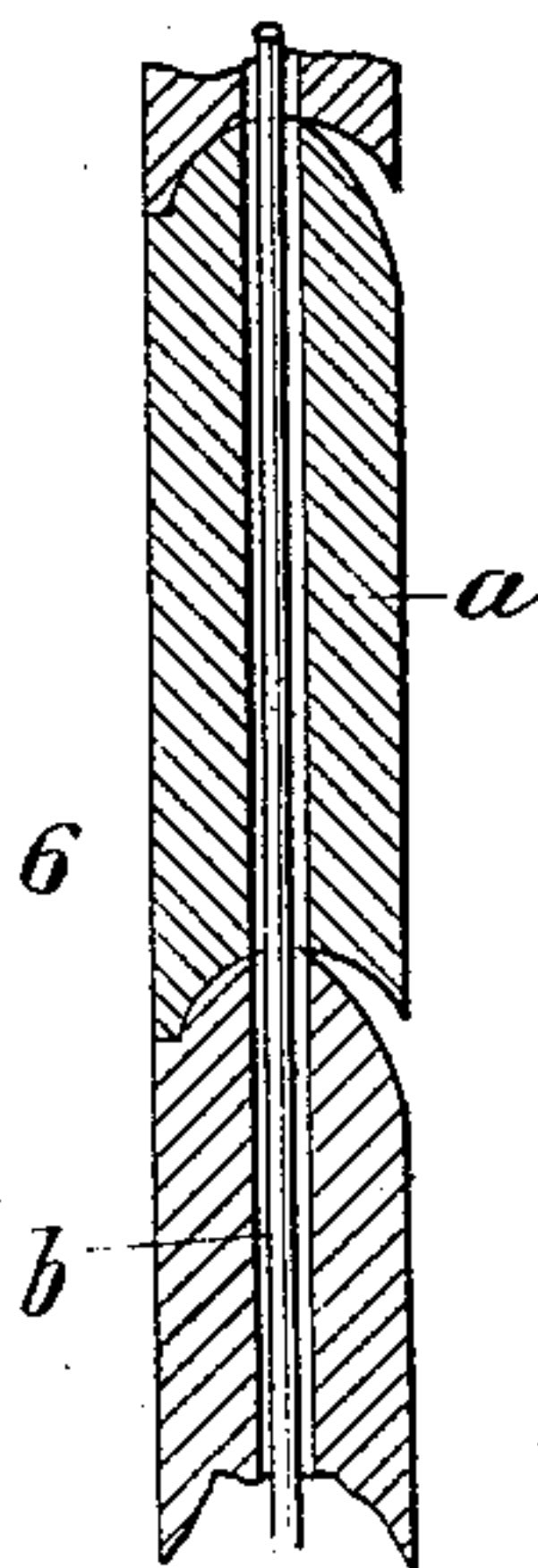


Fig 6



Witnesses

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# UNITED STATES PATENT OFFICE.

AZRO B. ALLEN, OF FARMINGTON, IOWA.

## RAILWAY-CAR.

SPECIFICATION forming part of Letters Patent No. 260,920, dated July 11, 1882.

Application filed April 2, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, AZRO B. ALLEN, a citizen of the United States, residing at Farmington, in the county of Van Buren, in the State of Iowa, have invented certain new and useful Improvements in Railway-Cars, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a freight-car having my improvements. Fig. 2 is a section of the same on the line  $x x$ , Fig. 1. Fig. 3 is a section on the line  $y y$ , Fig. 2, extending for about half the length and half the breadth of the car. Fig. 4 is a section on the line  $z z$  in Fig. 2, extending for about half the height and half the length of the car. Fig. 5 is a detailed and enlarged section on the line  $v v$  in Fig. 2, showing the setting of the door in its jamb. Fig. 6 is a detailed and enlarged section of a part of the door on the line  $x x$  in Fig. 1.

The same letters denote the same parts in all the figures.

My invention relates to freight or baggage cars provided with flexible doors on the general principle of Letters Patent No. 78,188, issued to Martin M. Crooker, May 26, 1868; and the object of it is to make such doors more durable and more extensively useful than they can be with the construction and arrangement shown in the Letters Patent aforesaid.

To this end my invention consists in the several devices and combinations of devices, which will be fully described hereinafter, and definitely pointed out in the claims.

In the drawings, A and A' denote respectively upper and lower sections of a flexible door, arranged in the usual place in the side of a freight or baggage car. As shown in the drawings, the lower section, A', is not quite half as high as the doorway, the design being that its upper edge shall stand at the proper height for inclosing a load of wheat or shelled Indian corn. The upper section, A, is of about four-fifths the height of the lower, the design being that when both sections are closed, as shown in Fig. 1 of the drawings, its upper edge shall stand at the proper height to inclose a load of oats or ear-corn. It is obvious that the number and proportions of the

sections may be varied to suit the varieties of cargo which the car is intended to carry. Each section is composed of horizontal slats or strips  $a$ , of wood or other suitable material, arranged one above the other, each slat being saliently curved on its upper and re-entrantly on its lower edge, as shown in Fig. 6, so that the slats may form a close joint when arranged vertically and may turn one upon another, so as to slide under the roof of the car when it becomes necessary to have the door wholly or partly open. Of course the upper edge of the uppermost slat of the upper section and the lower edge of the lowest slat of the other need no such curvature. Through each slat, and at right angles to its length and thickness, are bored two or more holes, so as to make through the whole section a continuous passage completely encircled except at the ends. Through each passage extends a spring-wire or strip of flexible metal or cord,  $b$ , which may be fastened in any suitable way at the ends, and which thus holds the several slats of the section firmly together, while its flexibility allows them to turn one upon another. As shown in Fig. 6 of the drawings, the curvature on the edges of the slats does not extend quite to the outer side of the slat, both edges being at right angles to the height of the slat for a little way in; thence the re-entrant curve of the lower edge corresponds exactly to the salient curve of the upper edge as far as the point where the wire passes through. There, however, the re-entrant curvature of the lower edge becomes more gradual than the salient curvature of the upper, and so continues to the inner side. By reason of this peculiar formation, the slats, when arranged perpendicularly on the wires, form close joints with each other on the outer side, and their lower edges cannot be pushed inward, while on the inner side there is room for them to turn a certain distance on each other in the direction requisite for passing from the wall to the roof, and vice versa. I make the tubular passage through the slats of about three times the diameter (in the direction of their thickness) of the wire or other band, so that the band has room to bend in the slats, as well as between them. I thus avoid that breakage of the wire which I have



found to be frequent where it fitted the passage with any closeness. At the same time I facilitate the turning of the slats on each other.

The door is set in grooves *c*, which are cut 5 in the jambs *C*, as shown in Fig. 5 of the drawings, and thus has a free upward and downward motion, but no other. A continuation of each groove is formed on or in the corresponding timber, the course of the continuation being so arranged that the groove extend- 10 ing from one side of the car may pass just above or below that extending from the other. The length of each continuation is sufficient to allow the whole door to be stowed under the roof. Where the side of the car meets 15 the roof the upper wall, *c'*, of each groove is curved in a quadrant, as shown in the Letters Patent No. 78,188, already referred to; but in order to give the slats more room to turn in, which experience has shown to be neces- 20 sary to the easy motion of the doors, I make the lower wall, *c''*, of the groove of a considerably less curvature, as shown in Fig. 2 of the drawings. With this formation the door is 25 readily slipped up and down to open or close.

An additional pair of grooves may be arranged outside of the others on one or both sides of the car, so as to admit of an outside door of height sufficient to close the doorway 30 entirely; or the single door may be made with sections enough to serve the same purpose.

A catch, *D*, is pivoted on the inner side of the uppermost longitudinal timber of the car-frame, as shown in Fig. 2, its direction being 35 toward the opposite side of the car. It is provided with a heel at the pivoted end, which prevents it from falling much below a horizontal position, but does not prevent it from be-

ing turned upward. The door, therefore, can be raised for the purpose of opening it with- 40 out interference from the catch; but having been pushed back past the catch, it is prevented by the latter from coming down again until the catch is lifted.

I put at one or each end of the car a flexi- 45 ble door or window, *A*<sup>2</sup>, of similar construction to the sections already described and having a motion in similar grooves, *e*, as shown in Fig. 4. Ordinarily a single section in this place will answer every purpose, and the catch 50 already described may be dispensed with, inasmuch as an aperture in such a position is very apt to be carelessly left open when the train starts. If there is no catch, and the door is not set too tight in its grooves, the jar caused 55 by starting the train, or even by coupling, will shake the door down, so that the aperture will be closed and sparks and dust excluded.

What I claim as my invention, and desire to 60 secure by Letters Patent, is—

1. The slats *a*, shaped as described, arranged edge to edge, and provided with perforations at right angles to their length and thickness, arranged to form a continuous pas- 65 sage, in combination with the flexible bands *b*, extending through the passage, substantially as and for the purpose described.

2. In a railway-car, the hinged catch *D*, arranged as described, in combination with the 70 flexible sliding door, substantially as and for the purpose described.

AZRO B. ALLEN.

Witnesses:

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