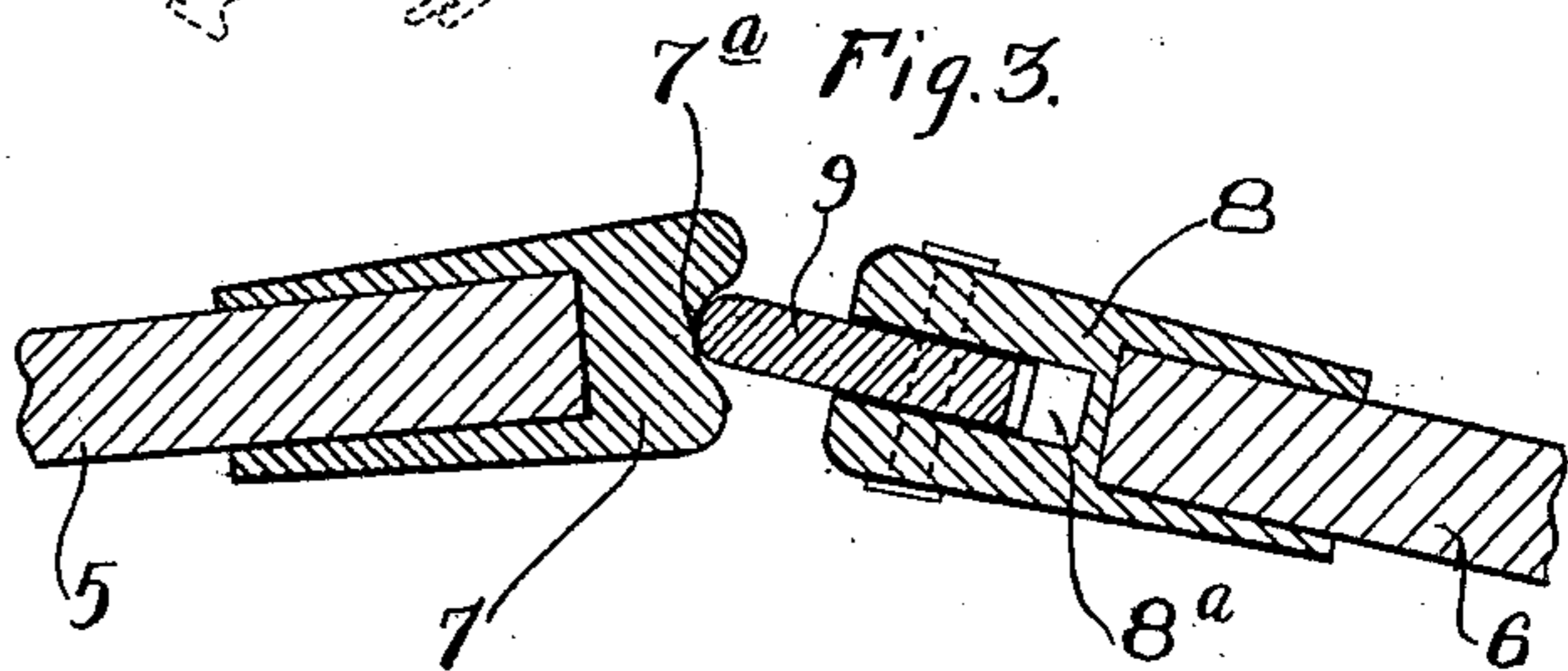
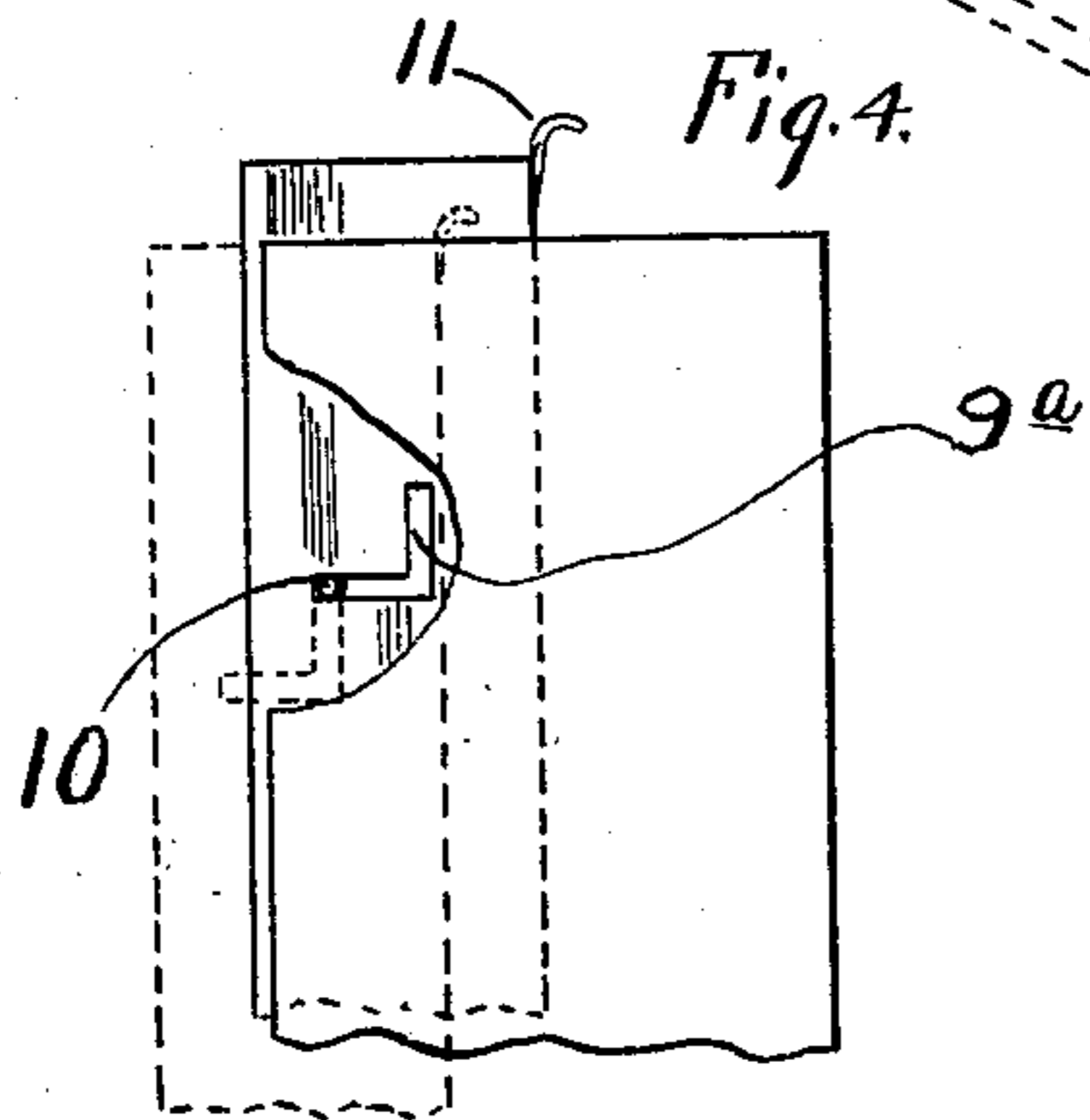
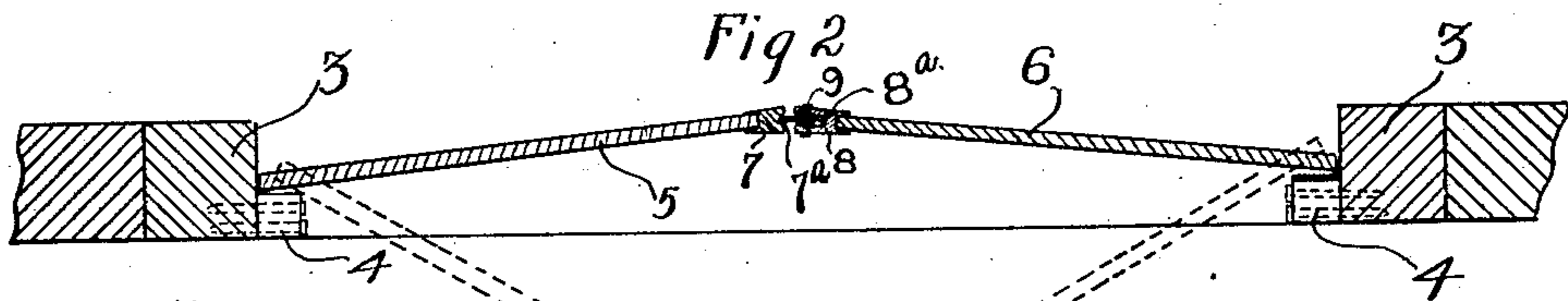
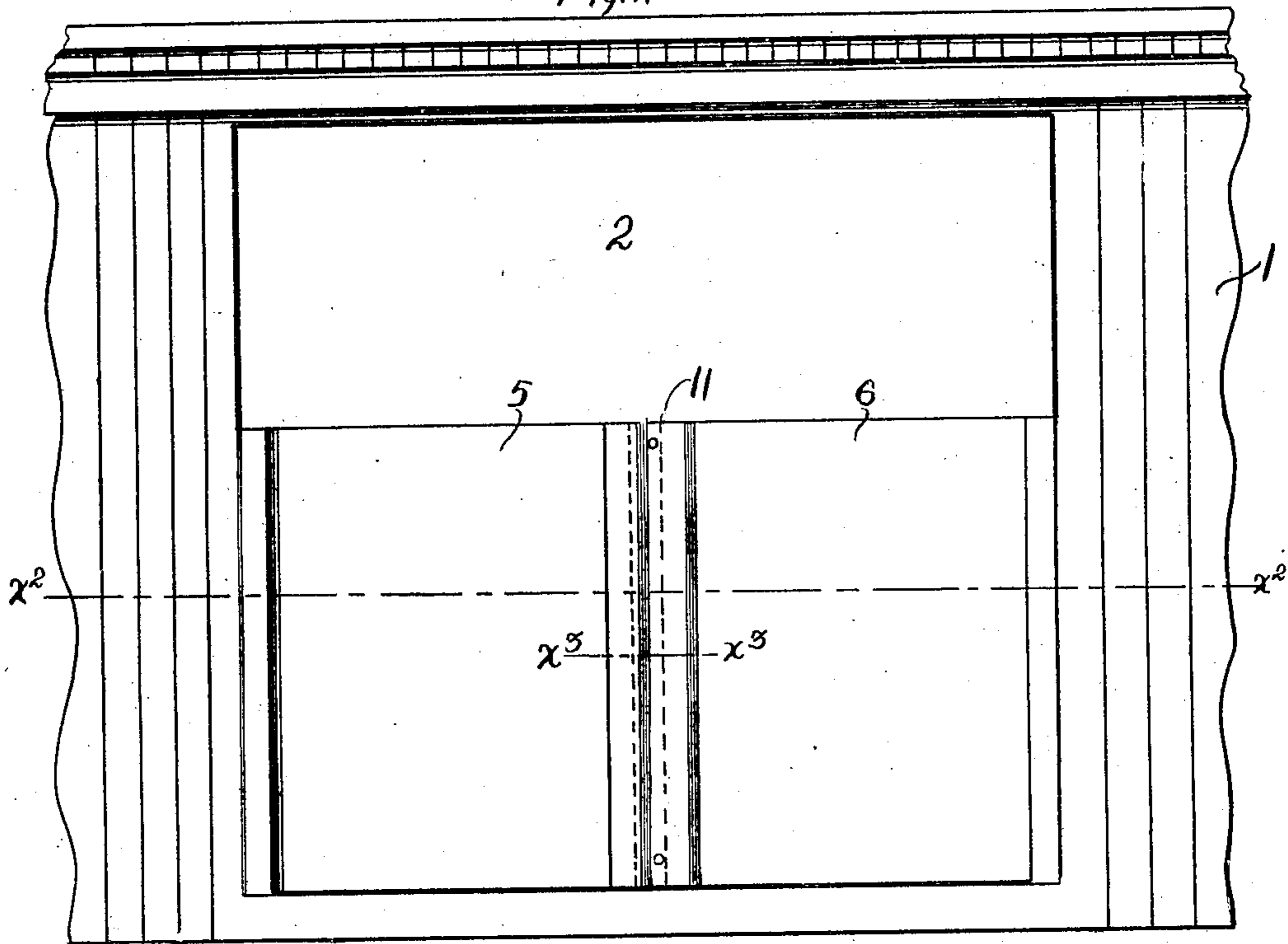


No. 882,014.

PATENTED MAR. 17, 1908.

C. C. NEALE.
GRAIN DOOR FOR CARS.
APPLICATION FILED MAR. 15, 1907.

Fig. 1.



Witnesses:
Leon B. Losey.
Mahie Hoch.

Inventor:
Chas. C. Neale,
By his Attorneys:

Williamson Merchant

UNITED STATES PATENT OFFICE.

CHARLES C. NEALE, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR OF THREE-TENTHS TO JOHN P. NASH, THREE-TENTHS TO WILLIAM M. NASH, ONE-FIFTH TO HELENA M. NEALE, AND ONE-FIFTH TO JOHN H. STEELE, ALL OF MINNEAPOLIS, MINNESOTA.

GRAIN-DOOR FOR CARS.

No. 882,014.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed March 15, 1907. Serial No. 362,454.

To all whom it may concern:

Be it known that I, CHARLES C. NEALE, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Grain-Doors for Cars; 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.

My invention has for its especial object to provide an extremely simple and highly efficient grain door for cars, and to this end it consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

My invention provides a grain door which is of very simple construction, which when applied in working position will very tightly close the door opening, and which by a proper manipulation may be released and completely removed from the door opening.

The improved grain door comprises a multiplicity, preferably a pair, of door sections and a so-called receding lock bar arranged to coöperate with said door sections, when the door is applied in working position, to form an arch having its bearings or bases of resistance against the sides of the door frame and adapted to be held in working position by pressure of the grain from within the car body. When the lock bar is retracted or permitted to recede from its projected or operative position, the arch formed by the grain door is permitted to buckle and swing freely outward, thereby opening the door-way and releasing the grain.

In the accompanying drawings which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings, Figure 1 is a view in side elevation, showing the central portion of a box car body of standard construction, and showing one of my improved grain doors applied to one of the side door openings thereof. Fig. 2 is a horizontal section taken on the line $x^3 x^3$ of Fig. 1. Fig. 3 is an enlarged section taken on the line $x^3 x^3$ of Fig. 1; and Fig. 4 is a detail in elevation, showing the so-called receding lock bar, and a reinforcing channel bar of one of the door sections.

The car body 1 is provided with the usual

side door openings 2 formed between vertical door posts 3 of the usual construction. Heavy stop cleats 4 are secured by bolts, screws, or other devices to the opposing faces of the door posts 3, adjacent to the outer portions of the said door posts.

The improved grain door is made up of door sections 5 and 6, which door sections may be either of metal or wood, or in part of wood and a part of metal.

In what I believe to be the best arrangement of this grain door, the so-called receding lock bar is applied between the opposing inner edges of the door sections 5 and 6 and is thus made to serve as a key to the arch formed by the component parts of the grain door. To this end, a metallic reinforcing channel 7 is applied to the inner edge of the door section 5, and another metal reinforcing channel 8 is applied to the inner edge of the door section 6. The reinforcing channel 7 is formed at its projecting edge with a recess or groove 7^a that extends from top to bottom thereof. The channel 8 is provided at its inner edge with a deep groove 8^a that extends from top to bottom thereof and in which the receding lock bar or key 9 is movably seated. This bar or key 9 is preferably a flat steel bar of approximately the same length as the said channel 8, and it is formed with a multiplicity, preferably two, approximately L-shaped slots 9^a. Bolts or rivets 10 are passed through perforations in the flanges of the channel 8 and through the respective slots 9^a of the said lock bar. At its upper end, the lock bar 9 is shown as provided with a projecting finger 11 by means of which it may be raised. When the lock bar 9 is dropped into the position shown by dotted lines in Fig. 4, with the vertical portions of its slots 9^a engaging with the bolts 10, it is locked in its projecting position.

The dimensions of the door sections and coöperating lock bar are such with respect to the door opening that when the said lock bar is secured in its projected position just stated, and the parts are put together as shown in Fig. 2, with the outer edges of the door sections bearing against the door posts 3 and stop cleats 4, an arch will be formed by said grain door. This arched grain door, as is obvious, will be held in working position by pressure of grain from the interior of the car.

To release the door, it is only necessary to

move the lock bar 9 upward until the horizontally extended portions of its slots 9 are brought into horizontal line with the respective bolts 10, whereupon the pressure on said lock bar will press the same inward or cause the same to recede within the slot 8^a of the channel 8. This receding movement of the lock bar 9 shortens the arch to such an extent that the grain door will buckle and the sections thereof will be moved outward by pressure of the grain and will fly from working position and thus open up the doorway and permit the escapement of grain.

It will thus be seen that the grain door described may be very quickly and easily applied in working position and very quickly and easily released when desired, and at the same time that there is no possibility of the said grain door being accidentally released or opened up under jars or strains incident to the service. The grain door may be so easily released by the proper manipulation of the lock bar that there will be no temptation on the part of the persons in charge of unloading the car to break the door open. In fact, by proper manipulation described, the grain door may be released much more easily than it can be broken open. When the grain door is not in use, it will take up but very little room. The sections thereof may, if desired, be chained to the sides of the car, but this is a matter aside from my present invention. The receding lock bar may be applied in a great many different ways. It might, for instance, be applied to one of the outer edges of one of the door sections and engage directly with one of the door posts. It might even be applied in one of the door posts, although this latter construction would not be desirable and would not be the full equivalent of the better construction above described. This improved grain door is thought to meet all of the requirements of a commercially successful grain door for use in cars.

The improved door has for convenience been described as a grain door, but it will, of course, be understood that it is not limited to its use in connection with grain or any other particular material. It would be a highly

efficient door for use in connection with cars loaded with coal, for example.

What I claim is:

1. The combination with a car body having a door opening, of a door made up of a multiplicity of door sections and a receding lock bar, the said door sections and lock bar being so proportioned to the width of the door opening as to form an arch when the lock bar is projected, substantially as described.

2. The combination with door posts, of a door made up of a pair of door sections and a receding lock bar applied to one thereof; the said door sections and lock bar being so proportioned to the opening between said door posts as to form an arch when said lock bar is projected, and which lock bar when retracted permits the door to buckle, substantially as described.

3. The combination with a car body having a door opening, of a car door made up of a pair of door sections and a receding lock bar mounted in the inner edge of one of said door sections and detachably engageable with the inner edge of the other door section, the said door sections and lock bar being so proportioned to the width of the door opening as to form an arch when said lock bar is projected, and which lock bar when retracted permits the door to buckle, substantially as described.

4. The combination with door posts 3 having stop cleats 4, of a door made up of sections 5 and 6 and having at their inner edges reinforcing channels 7 and 8, respectively, and a receding lock blade 9 seated in said channel 8 and engageable with the groove in said channel 7, and means for holding said lock blade projected, the said door sections and lock blade being so proportioned to the width of the opening between said door posts as to form an arch when said lock blade is projected, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES C. NEALE.

Witnesses:

F. D. MERCHANT,
M. E. RONEY.