

(No Model.)

3 Sheets—Sheet 1.

E. D. BRONNER, R. POTTS & W. A. PUNGS.

GRAIN DOOR FOR CARS.

No. 422,909.

Patented Mar. 11, 1890.

FIG. 1.

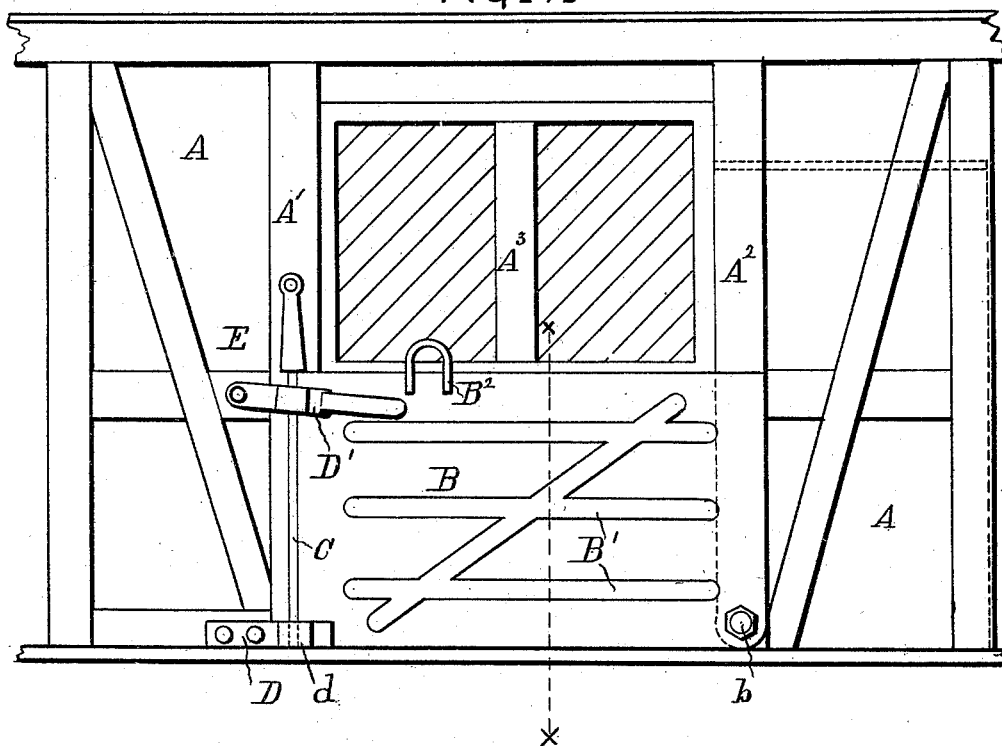
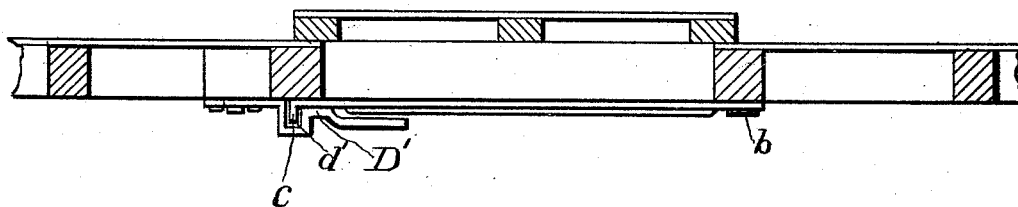


FIG. 2.



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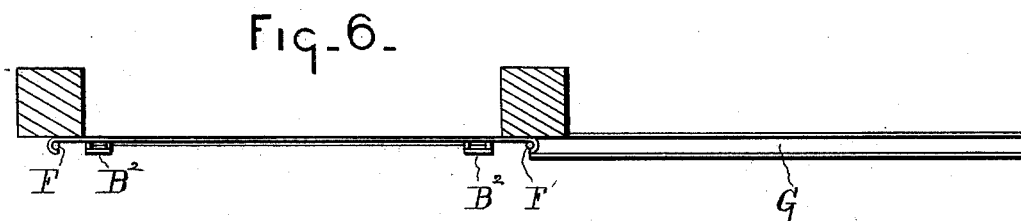
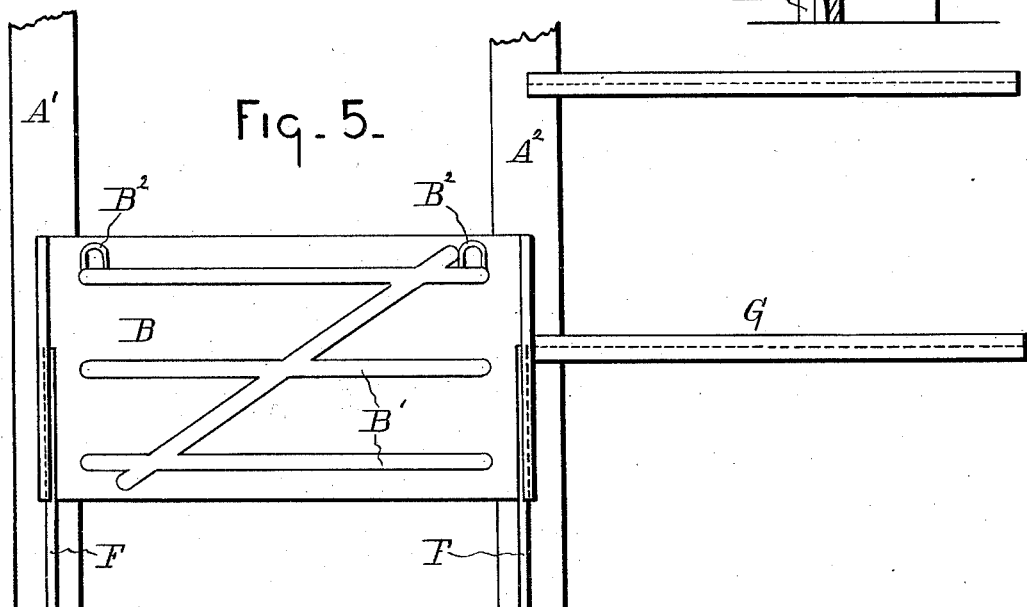
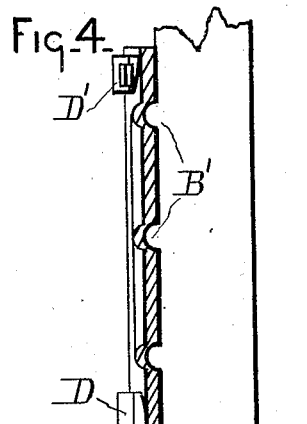
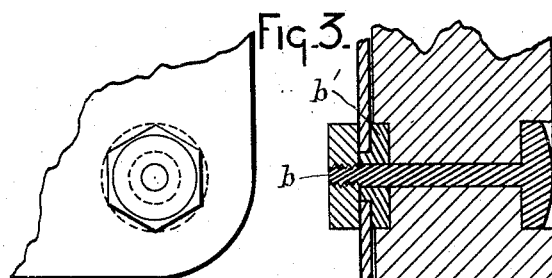
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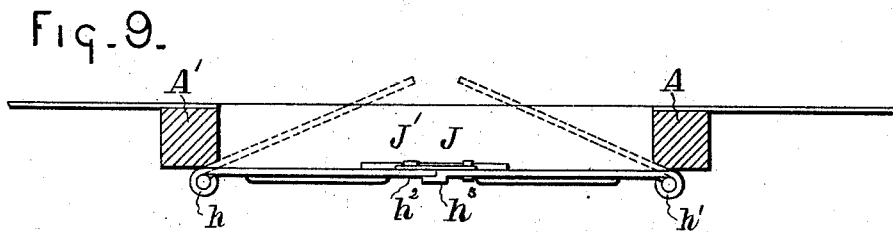
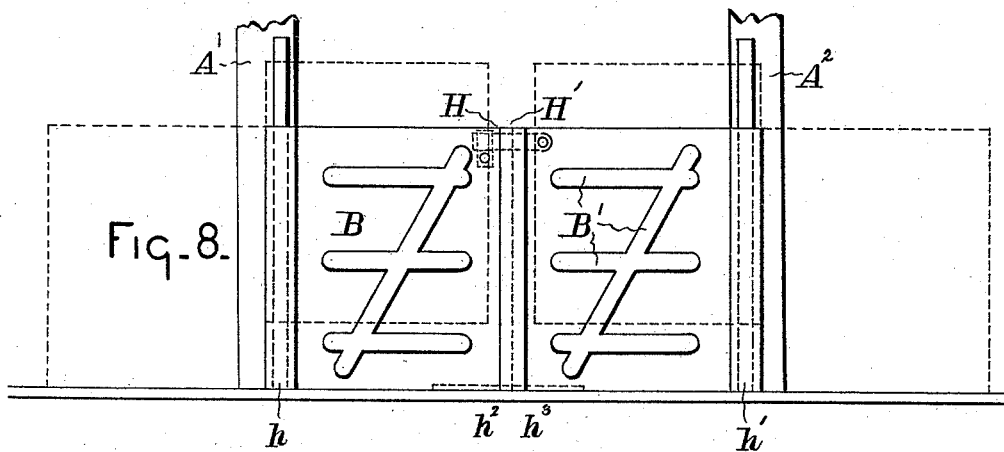
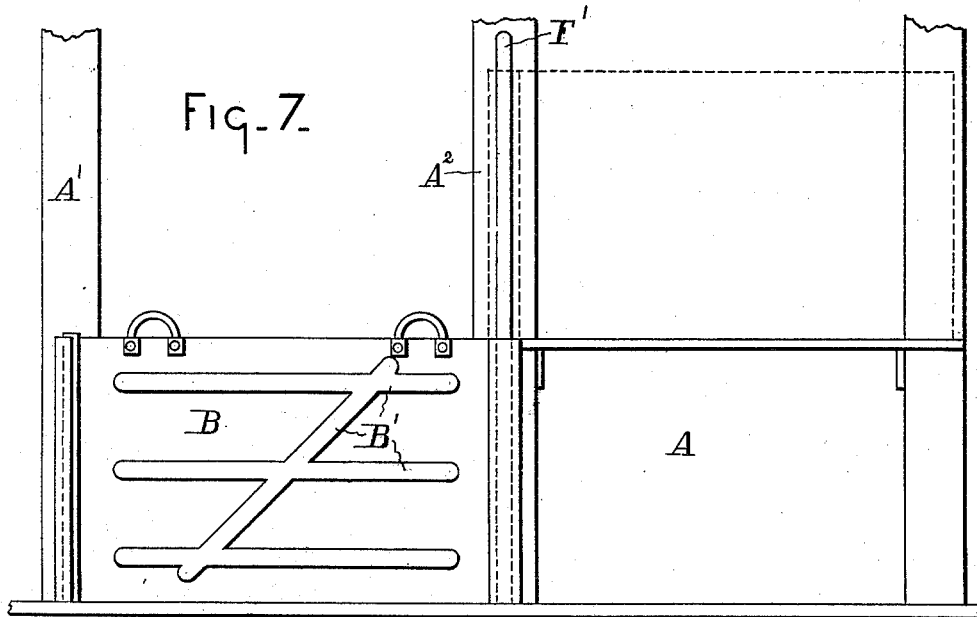
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# UNITED STATES PATENT OFFICE.

EDMOND D. BRONNER, OF DETROIT, MICHIGAN, ROBERT POTTS, OF ST. THOMAS, ONTARIO, CANADA, AND WILLIAM A. PUNGS, OF DETROIT, MICHIGAN, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO THE METALLIC GRAIN DOOR COMPANY, OF DETROIT, MICHIGAN.

## GRAIN-DOOR FOR CARS.

SPECIFICATION forming part of Letters Patent No. 422,909, dated March 11, 1890.

Application filed May 27, 1889. Serial No. 312,269. (No model.)

*To all whom it may concern:*

Be it known that we, EDMOND D. BRONNER, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, ROBERT POTTS, a subject of the Queen of Great Britain, residing at St. Thomas, county of Elgin, Province of Ontario, Canada, and WILLIAM A. PUNGS, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Grain-Doors for Cars; and we 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 pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

Our invention has for its object to provide a grain-door for cars that because of its construction will not bow and allow the grain to work out; one that because of its lightness can be easily raised out of position when desired, and one that because of its simplicity can be cheaply manufactured; and these objects we accomplish by making the door of steel or other suitable metal and by the peculiar shape and construction hereinafter described and claimed.

In the drawings, Figure 1 is an elevation of the inside of a car with our grain-door in position. Fig. 2 is a view looking down on the upper edge of the door. Fig. 3 is a view showing the manner of pivoting the door. Fig. 4 is a section on the line *xx*. Fig. 5 represents a variation in the mode of fastening and removing the door. Fig. 6 is a plan of the same. Fig. 7 is a side elevation of another elevation. Fig. 8 is an elevation showing two doors instead of a single one, and Fig. 9 is a plan view of the form shown in Fig. 8.

In carrying out our invention, A represents the side of the car; A' A<sup>2</sup>, the door-posts; A<sup>3</sup>, the outer door of the car.

B represents our grain-door, composed of sheet metal, preferably sheet-steel.

B' are the corrugations in the steel for stiffening and strengthening the construction. These corrugations may be any number and

extend in any direction desired; but we prefer to make them as shown—viz., three horizontal corrugations and one diagonal corrugation extending from corner to corner.

*b* is the pivot on which the door is swung, and by placing the washer *b'* between the door and the door-post the door is prevented from binding on the side of the car or on the door-post and yet is held firmly.

B<sup>2</sup> is a handle, whereby the door may be swung up out of position, as shown in the dotted lines in Fig. 1.

In order to thoroughly stiffen the door constructed as described and to prevent it from bulging, we form on the edge opposite the pivot *b* a flange C. This may be accomplished, if desired, by riveting a piece on the edge; but we prefer to simply turn the metal along the edge at right angles to itself, as shown in Figs. 1 and 2.

Where the door is supported other than on a pivot, the construction of the flanged edge will be varied, as more particularly herein-after shown and described.

D D' are cleats for engaging and holding the ends of the door when it is in place. The cleat D is stationary or rigid, and, being shaped as shown, when the door descends, the flange C entering the recess *d* in the cleat, the door is prevented from bulging by the flange. The cleat D' is shaped similar to the cleat D and pivoted to the frame. After the door is in place this cleat may be thrown over, so that the recess *d'* will engage the flange, and thus lock the door still more firmly in place. It will be observed that these cleats D D' are beveled slightly on their inner faces, Fig. 4, the cleat D opening up while the cleat D' opens down. Thus when the door is dropped into place the beveled face of the cleat D forces it against the post, and the beveled face of the cleat D', when the latter is thrown into place, forces the upper edge of the door tightly against the door-post. By thus providing the flanges on the ends of the door and having the cleats into which the flange drops the door may be made of much lighter material, since the whole construction is stiff-

ened by the flanges, and when the latter enter the cleats it is impossible to bow the door without bending the metal or tearing out the cleats.

5 E is a small pendulum-latch pivoted above the corner of the door, so that when the door is dropped into place it can only be raised by first throwing the latch to one side.

If for any reason it is practicable to have  
 10 the door pivoted and swung up, it may be fastened as shown in Fig. 5. In this variation the ends of the door are curled to give the desired stiffness and also to loosely embrace the rods F F', which extend up parallel with  
 15 the door-posts. These rods are the same height as the width of the door, so that to remove the door the operator has only to lift the door off the rods and then slide it along on any suitable track or support G; or, if  
 20 desired, the rod F' may be extended up to the top of the car and act as a hinge by which the door after being raised up may be swung around against the side of the car and rest on the usual ledge found in all grain-cars. This  
 25 latter construction is illustrated in Fig. 7; or, if desired, we may use the construction shown in Fig. 8, where the door is divided, as at H H'. The edges  $h h'$  may be curled, as in Fig. 5, and the edges  $h^2 h^3$  made to lap each  
 30 other. The doors may be fastened by the lever J, pivoted to one door and dropping into the cleat J' on the other door. This latter construction is very advantageous, since in emptying the car the lever may be thrown up  
 35 and the doors thrown out, as shown by the dotted lines in Fig. 9. Then when the car is emptied the doors may be swung back and

around against the side of the car. The doors would thus act as a hood to keep the grain from scattering when emptying the car. 40

What we claim is—

1. The combination, with a grain-door for cars, made of sheet metal and having one end turned at right angles to constitute a flange, of means on the door-post for engaging said  
 45 flange to hold the door in place, substantially as described.

2. A metallic grain-door for cars, having a flange extending at right angles from the end, one end of said door pivoted to the door-post, 50 and cleats on the opposite door-post adapted to engage the flange on the opposite end of the door, substantially as described.

3. The combination, with a metallic grain-door for cars, having a flange extending at  
 55 right angles from one end, of cleats on the door-post, each provided with a recess in which the flange is engaged, the inner faces of said cleats being beveled to force the door tightly against the post, substantially as described. 60

4. The combination, with a metallic grain-door for cars, having a stiffening-flange on its end, of a pivoted cleat having its inner face beveled and adapted to engage the upper  
 65 corner of the door and hold it tightly against the door-post, substantially as described.

In testimony whereof we sign this specification in the presence of two witnesses.

EDMOND D. BRONNER.

ROBERT POTTS.

WILLIAM A. PUNGS.

Witnesses:

JOHN G. DINGWALL,

WILLIAM E. HIGGINBOTHAM.