

V. FITZ W. BERFORD.

GRAIN DOOR.

APPLICATION FILED MAY 21, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

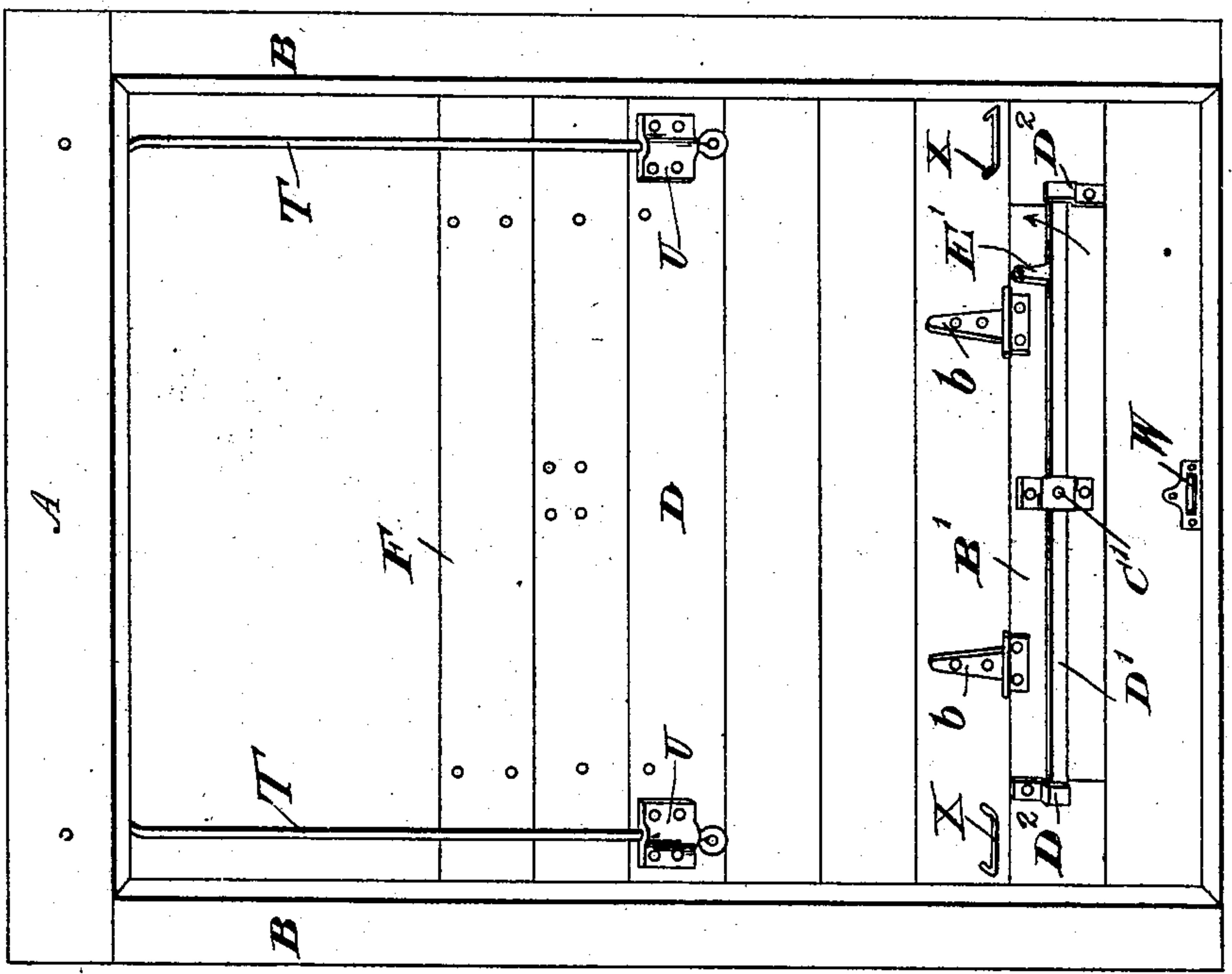


Fig. 2.

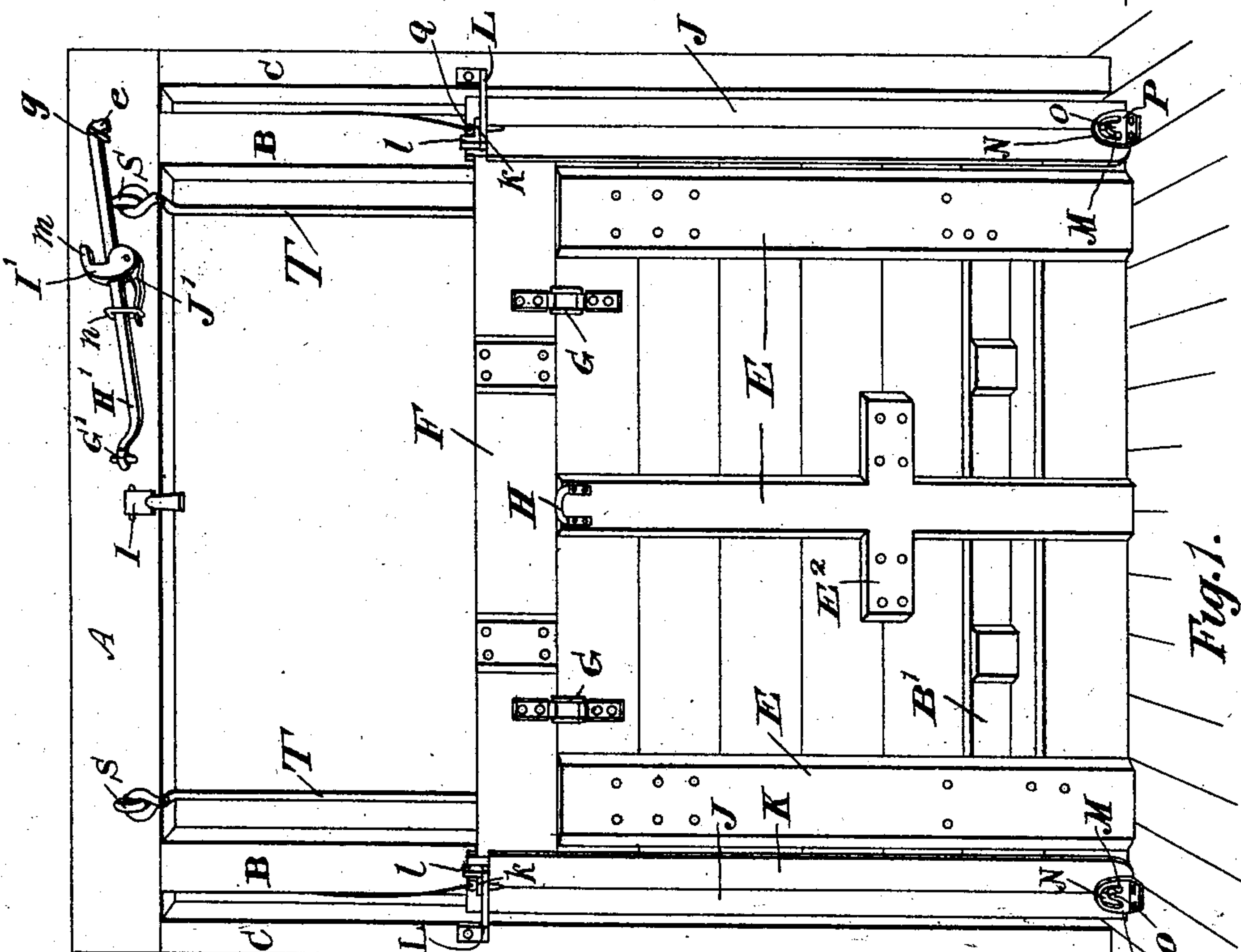


Fig. 1.

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No. 724,784.

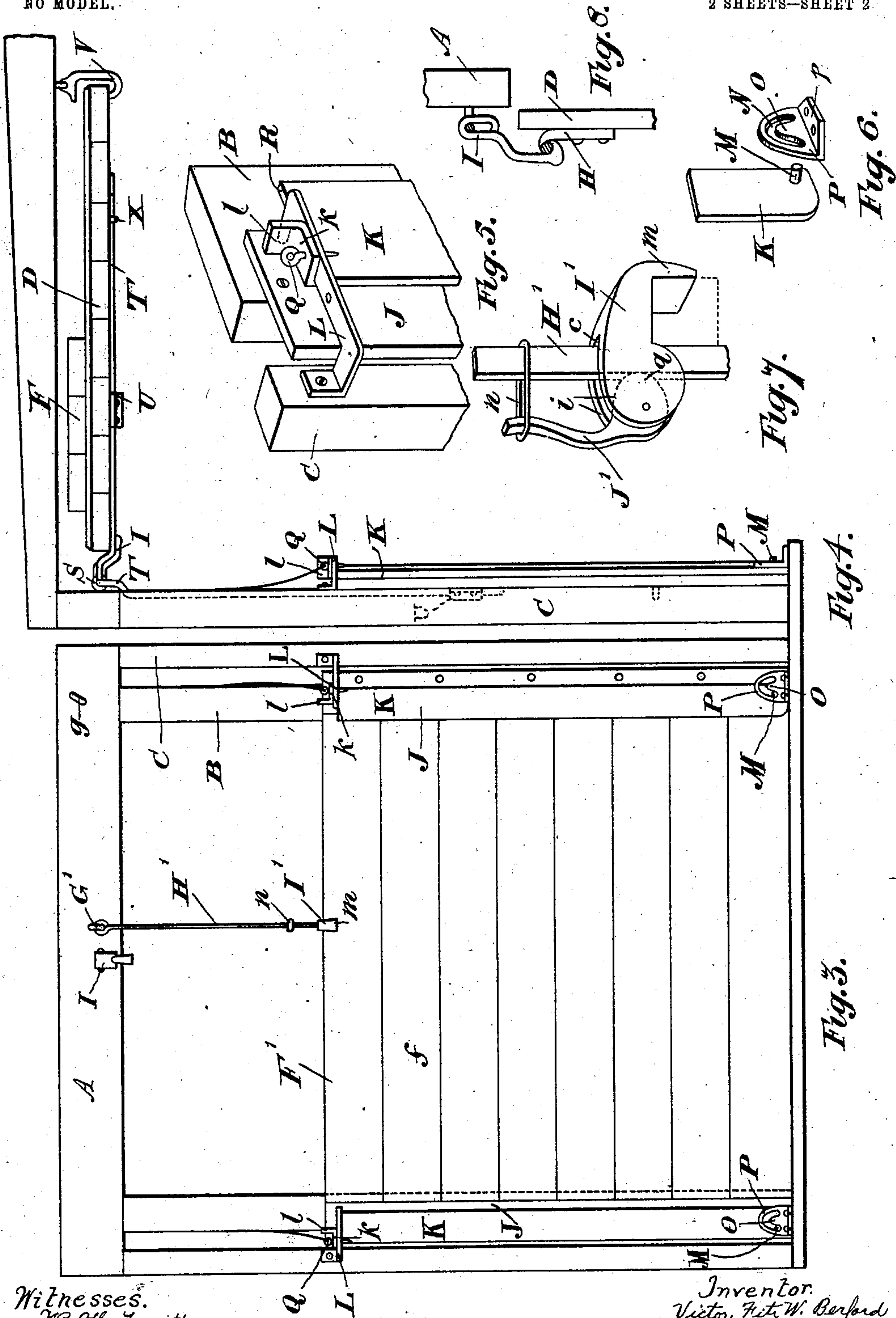
PATENTED APR. 7, 1903.

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Jean Hunter.

Inventor.
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UNITED STATES PATENT OFFICE.

VICTOR FITZ WILLIAM BERFORD, OF TARA, CANADA.

GRAIN-DOOR.

SPECIFICATION forming part of Letters Patent No. 724,784, dated April 7, 1903.

Application filed May 21, 1902. Serial No. 108,351. (No model.)

To all whom it may concern:

Be it known that I, VICTOR FITZ WILLIAM BERFORD, a subject of the King of Great Britain, residing at Tara, in the county of Bruce, Province of Ontario, Canada, have invented new and useful Improvements in Grain-Doors, of which the following is a specification.

My invention relates to improvements in grain-doors; and the object of my invention is to design a door of the class described more particularly adapted for railroad-cars that can be easily and cheaply attached to the existing cars without altering said cars' construction.

A further object of my invention is to construct my grain-door so that same may be easily released from its fastenings and hung up out of the way within the car when necessary.

A still further object of my invention is to construct the door proper—that is, that part of same that prevents the grain from falling out of the car—in several ways without departing from the spirit of my invention.

My grain-door consists, essentially, of a barrier or door, constructed as hereinafter more particularly explained, held between means which prevent its lateral displacement. Locking-bars are provided for keeping said door in place. The said door may also be provided with suitable hangers to enable same to be stored away at the roof of the car.

There are other details of construction that will be fully described in this specification.

Figure 1 is a perspective view of the inner side of my preferred form of door. Fig. 2 is a perspective view of the outer side of my grain-door. Both this view and Fig. 1 show my door attached to an ordinary grain-car, as do also Figs. 3 and 4. Fig. 3 is an elevation of an alternative form of door looking at inner side of same. Fig. 4 shows an end elevation of Fig. 1, also showing the door hung up within the car. Fig. 5 is an enlarged detail in perspective of the upper end of one of the locking-bars and its supporting-bracket. Fig. 6 is an enlarged perspective view of the lower end of said locking-bars and chair for same. Fig. 7 is an enlarged perspective view of a clamping-hook used with my door. Fig. 8 is an enlarged detail, partly in section, showing

the hook for keeping the door in a vertically-suspended position.

In the drawings like letters of reference indicate corresponding parts in each figure.

A is the main beam of the car, and B and C vertical supports for same.

D is the preferred form of door, which consists of a number of planks secured together on their inner side by battens E or in any other suitable way, thus making the door one piece. The upper part of this door is preferably provided with one or more planks which form a flap F, hinged thereto by suitable hinges G, that will when said flap is flung back leave sufficient room between itself and the door proper so that when the said door is raised up (purchase on the door is got by means of the cross-piece E² of the middle batten) its grip H will be engaged by the hook I, (see Fig. 8,) secured to the main beam A, and hold said door up out of the way, so that the remaining grain on the car-floor may be easily swept from said car.

Secured adjacent each side of the door, as shown, and to, for instance, the supports B and for height of the whole door are fillers J, which prevent the door from having any lateral movement or displacement. The ends of the boards forming said door rest against the inside of the uprights B, as will be seen from the drawings, thus preventing the door from being moved outwardly. I do not confine myself to using the fillers J for this purpose, as it is very obvious that the said door may be prevented from lateral displacement in many ways without departing from the spirit of my invention. For instance, the uprights B might easily be constructed to perform this function. The means for preventing lateral displacement of the door will be made flush with the surface of said door.

In order to retain the door in its normal position, I provide two locking-bars K, the upper ends of which are cut and bent at an angle, forming a piece *k*, Fig. 5, which ordinarily rests adjacent the top side of the brackets L. The remaining part *l* of the top is bent upwardly, so as to form a convenient piece for taking hold of, so as to move, said locking-bars. The said locking-bars are essential elements in my invention; but I do

not confine myself to manufacturing the top portions of same as I have just described; but by so manufacturing the top of said locking-bars I enable same to be held securely in position and at the same time allow said locking-bars to project sufficiently beyond said fillers J so as to well overlap the sides of the door D, as shown in the drawings. The brackets L are so constructed as to allow plenty of movement in the required direction for said locking-bars K, so as to enable same to be moved entirely away from the side of the door D, as will be seen at the left-hand side of Fig. 3, to permit said door to be swung into position shown in Fig. 4. The said brackets L may be of any suitable construction and are secured to a suitable part of the car-frame.

Secured near the lower end of each locking-bar and near the outer edge of same is a stud M, which has movement in a curved slot N, divided into an inner and outer portion by the dividing-piece O in the chair P, which chair is suitably secured to the floor of the car. Each locking-bar has its chair P. The said chairs are preferably provided with a flange *p*, by means of which they are secured in place. When the locking-bars K are performing their function of retaining the door in position, the studs M are in the inner portion of the slot N, and the said locking-bars are locked in place by means of suitably-suspended pins Q, which pass through the holes shown in the piece *k* and bracket L. By securing the upper end of the locking-bars and providing the dividing-pieces O the said locking-bars are securely locked in place, and there is no danger of the door being displaced. When it is desired to remove the door, either one or both of the said locking-bars must be moved into the position shown at left-hand side of Fig. 3. By removing the pin Q from position shown in Fig. 5 and tilting the locking-bar until its projecting lower top R is in alinement with the slot made by the bracket L and its support the said locking-bar is raised upwardly until its stud M escapes the dividing-piece O and rests in the outer portion of the slot N. The pin R is then inserted in the holes in the portion *k* and bracket L and said locking-bar is securely locked in place out of the way.

Suitably linked with stout eyes S, secured on the inside of the beam A and bent near their upper ends, so as to freely operate on the outer side of the door, are two hangers T, which pass through guide-plates U, secured to said door. These hangers enable me to swing the door up to the roof of the car (it first having been raised up so that its grip H is engaged by the hook I, as before described,) and by means of the latch V, (secured to the roof of the car,) engaging the latch-plate W, securely store said door away, so that the ordinary car-door may be used in place thereof when necessary. The lower

ends of the hangers are suitably formed so as to keep said hangers within the guide-plates U.

X represents staples secured in the door and used to keep the hangers T well in place when the door is in the position shown in Fig. 4.

In order to facilitate unloading of the car, I provide the door D near its lower end with a relief-trap B', which opens outwardly. *b* represents hinges securing said relief-trap to said door. I provide the following means for locking said relief-trap, but do not confine myself to this particular locking means: Pivoted on the outside of the relief-trap at C' is a bar D', which is longer than said door. The ends of this bar engage the keepers D², which are secured to the door D. When it is desired to open said relief-trap, the latch E' is moved so as to permit said bar D' to be moved the required distance in the direction indicated by arrow.

In place of the preferred form of door D, I may use the door F', composed merely of loose planks *f*, placed one upon the other, as shown in Fig. 3. This alternative form of door is provided with the described locking-bars and their connected parts, but is not provided with the hangers T. In order to keep the door F' in its assembled form and also to prevent the door D from being moved upwardly, I use any suitable means, such as the following: Linked to the eye G', secured to the inner side of the beam A, and bent near its upper end, so as to extend on the outer side of the door, is a rod H', provided with a clamping device constructed as follows: I' is a clamp provided with bifurcated ends *i*, between which is eccentrically pivoted the lever J'. Between this lever and the end *c* of the slot formed by said bifurcated ends *i* is the rod H'. This rod is placed in the position shown in Fig. 3, and the lip *m* of the said clamp is placed over the topmost board of door, and the lever J' is moved into position shown in Fig. 7, so that its clamping portion *q* squeezes the said lip *m* and rod H' together, thus securely gripping between them the top of the door. The keeper *n* is then slid down over the end of the lever J', thus holding the parts in place. The lower end of said rod H' is bent at an angle thereto, as shown at *e*, so that the clamp and its connected parts will not slide off the rod. When said rod is not in use, it is stored away against the inner side of the beam A by means of the staple *g*.

It will of course be understood that the flap F may be made of as many boards as is necessary to fully close the opening in the side of the car.

It will of course be understood from the drawings and specification that my grain-door when attached to a car opens always inwardly and that the locking-bars and their connected parts are also within the car. By securing the upper ends of the hangers T on

the inside of the beam A it will be seen that the ordinary sliding door of freight-cars will not be interfered with in its function.

I of course do not confine myself to only using my grain-door on grain-cars, as with suitable modifications well within the sphere of an ordinary mechanic the same may be used in connection with other grain-holding receptacles.

From this specification it will be seen that my door is cheaply made, is durable, and is well designed to withstand the rough usage that railroad-stock is subjected to. Although stoutly built, the door can be easily manipulated by one man.

I do not confine myself to the exact details of construction herein shown and described, as the same may be altered without departing from the spirit of my invention.

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

1. In combination with a grain-door, and supports against which said door rests, of a locking-bar extending parallel with the height of said door and down each side of same, both being on the same side of the door, the said locking-bars being supported so as to sufficiently overlap the edges of said door to hold same in place, or else when removed from contact with said door permitting removal of same; a chair fixed near the lower end of each of said locking-bars, the said chairs being so constructed as to associate with the lower end of said locking-bars to lock same in place, and yet permit movement of said locking-bars parallel to and immediately adjacent the plane of the door, and means at the upper end of said locking-bars for locking same in place.

2. In combination with a grain-door, and supports against which said door rests, of a locking-bar extending parallel with the height of said door and down each side of same, both being on the same side of the door, the said locking-bars being supported so as to sufficiently overlap the edges of said door to hold same in place, or else when removed from contact with said door permitting removal of same; a stud in each locking-bar; a chair fixed near the lower end of each of said locking-bars, the said chairs being provided with a curved slot and a dividing-piece separating said curved slot into an inner and an outer portion, the said studs resting in said curved slots, and means at the upper end of said locking-bars for locking same in place.

3. In combination with a grain-door, and supports against which said door rests, of a locking-bar extending parallel with the height of said door and down each side of same, both being on the same side of the door, the said locking-bars being supported so as to sufficiently overlap the edges of said door to hold same in place, or else when removed from contact with said door permitting removal of same; a stud in each locking-bar; a chair

fixed near the lower end of each of said locking-bars, the said chairs being provided with a curved slot and a dividing-piece separating said curved slot into an inner and an outer portion, the said studs resting in said curved slots; a bracket secured near the upper end of said locking-bars to support top of same but yet permit of movement of said locking-bars, the upper end of said locking-bars being formed at an angle so as to rest adjacent said bracket, and means for locking said top of said locking-bars to said bracket.

4. In combination with a grain-door; supports against which said door rests; means for locking said door in place, and hangers slidingly secured to said door and hinged at their upper ends to a suitable support above said door, the said hangers being for the purpose of enabling said door to be swung around their hinged ends and swung up out of the way, of a rod hinged above said door at one of its ends, and a movable clamping device, movable longitudinally on said rod for different heights of doors, for clamping said rod to the top of said door so as keep same from upward movement.

5. In combination with a grain-door; supports against which said door rests; hangers slidingly secured to the outer side of said door and hinged at their upper ends to a suitable support above said door, the said hangers being for the purpose of enabling said door to be swung around their hinged ends and swung up out of the way, and means for holding said door in its swung-up position, of a locking-bar extending parallel with the height of said door and down each side of same, both being on the same side of the door, the said locking-bars being supported so as to sufficiently overlap the edges of said door to hold same in place, or else when removed from contact with said door permitting removal of same; a stud in each locking-bar, a chair fixed near the lower end of each of said locking-bars, the said chairs being provided with a curved slot and a dividing-piece separating said curved slot into an inner and an outer portion, the said studs resting in said curved slots, and means at the upper end of said locking-bars for locking same in place.

6. In combination with a grain-door; a flap hinged to upper end of same, and designed to open inwardly; supports against which said door rests; hangers slidingly secured to the outer side of said door and hinged at their upper ends to a suitable support above said door, the said hangers being for the purpose of enabling said door to be swung around their hinged ends and hung up out of the way, and means for holding said door in its swung-up position, of a locking-bar extending parallel with the height of said door and down each side of same, both being on the same side of the door, the said locking-bars being supported so as to sufficiently overlap the edges of said door to hold same in place, or else

when removed from contact with said door permitting removal of same; a stud in each locking-bar; a chair fixed near the lower end of each of said locking-bars, the said chairs being provided with a curved slot and a dividing-piece separating said curved slot into an inner and an outer portion, the said studs resting in said curved slots, and means at the upper end of said locking-bars for locking same in place.

7. In combination with a grain-door; a flap hinged to upper end of same, and designed to open inwardly; a relief-trap hinged near the lower end of said door so as to open outwardly; supports against which said door rests; hangers slidably secured to the outer side of said door and hinged at their upper ends to a suitable support above said door, the said hangers being for the purpose of enabling said door to be swung around their hinged ends and swung up out of the way, and means for holding said door in its swung-up position, of a locking-bar extending parallel with the height of said door and down each side of same, both being on the same side of the door, the said locking-bars being supported so as to sufficiently overlap the edges of said door to hold same in place, or else when removed from contact with said door permitting removal of same; a stud in each locking-bar; a chair fixed near the lower end of each of said locking-bars, the said chairs being provided with a curved slot and a dividing-piece separating said curved slot into an inner and an outer portion, the said studs resting in said curved slots, and means at the upper end of said locking-bars for locking same in place.

8. In combination with a locking-bar constructed at its upper end to be locked to a bracket which allows it to have the required movement; the said bracket, and a stud near the lower end of said locking-bar, of a fixed chair, provided with a curved slot, and a dividing-piece which divides said slot into an inner and an outer portion, the said stud having movement in said slot and resting on either side of said dividing-piece, and locking means for securing the upper end of said locking-bar to said bracket so as to lock said locking-bar in a vertical position by keeping said stud in either ends of said curved slot adjacent said dividing-piece, as described.

9. In combination with a grain-door; supports against which said door rests; a locking-bar extending parallel with the height of said door, down each side of same and on its inner side, the said locking-bars being supported so as to sufficiently overlap the edges of said door to hold same in place or else when removed from contact with said door permitting removal of same, and means for locking said locking-bars, of a rod hinged above said door at one of its ends, and a movable clamping device movable longitudinally on said rod for different heights of doors for clamping same to the top of said door so as to keep said door from upward movement.

10. In combination with a grain-door; supports against which said door rests; a locking-bar extending parallel with the height of said door, down each side of same on its inner side, the said locking-bars being supported so as to sufficiently overlap the edges of said door to hold same in place or else when removed from contact with said door permitting removal of same, and means for locking said locking-bars, of a rod supported above said door; a clamp provided with a lip and a bifurcated end, the said rod passing through said bifurcated end, and a lever eccentrically pivoted in said bifurcated end and operating so as to move said rod and lip toward each other so as to clamp said door, as described.

11. In combination with a grain-door, and supports against which said door rests, of a locking-bar extending parallel with the height of said door and down each side of same, both being on the same side of the door, the said locking-bars being supported so as to sufficiently overlap the edges of said door to hold same in place, or else when removed from contact with said door permitting removal of same, and means for locking said locking-bars adjacent said door so as to overlap edges of same, the said locking-bars when unlocked being only capable of vertical lateral movement.

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

VICTOR FITZ WILLIAM BERFORD.

Witnesses:

J. F. SMITH,

A. W. DEACON.