

No. 704,949.

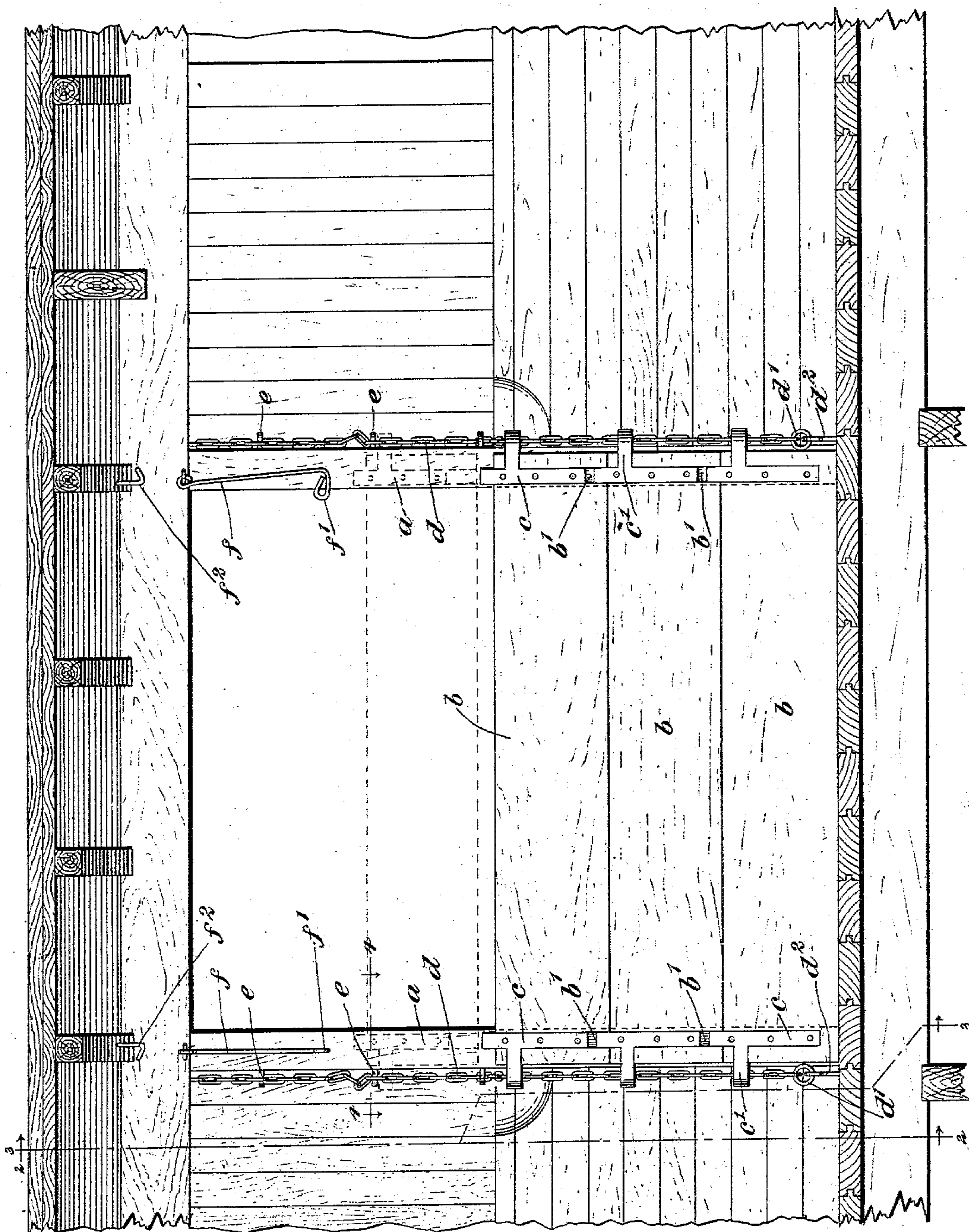
Patented July 15, 1902.

A. T. STARK.
GRAIN DOOR.

(Application filed Feb. 21, 1902.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES :

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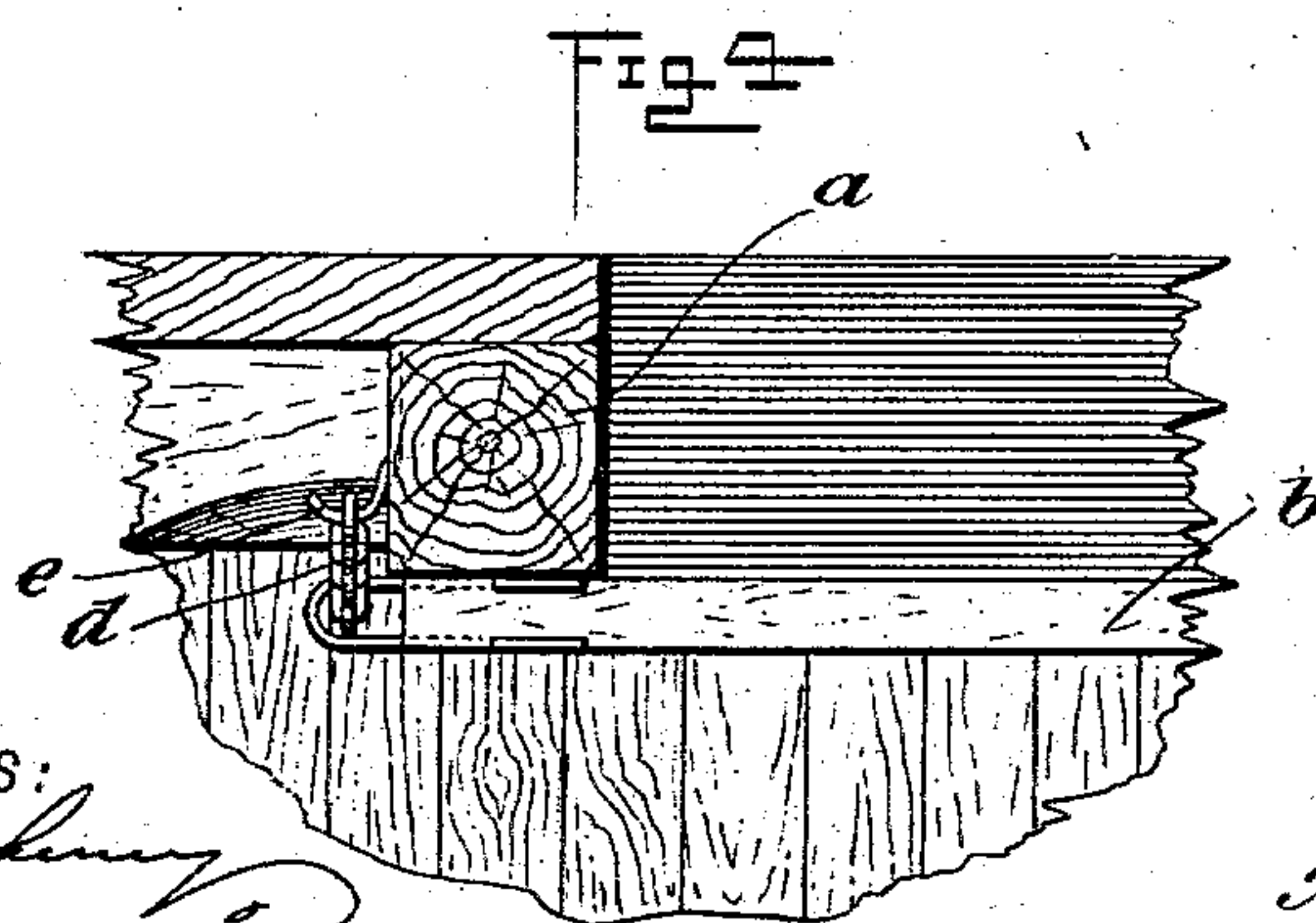
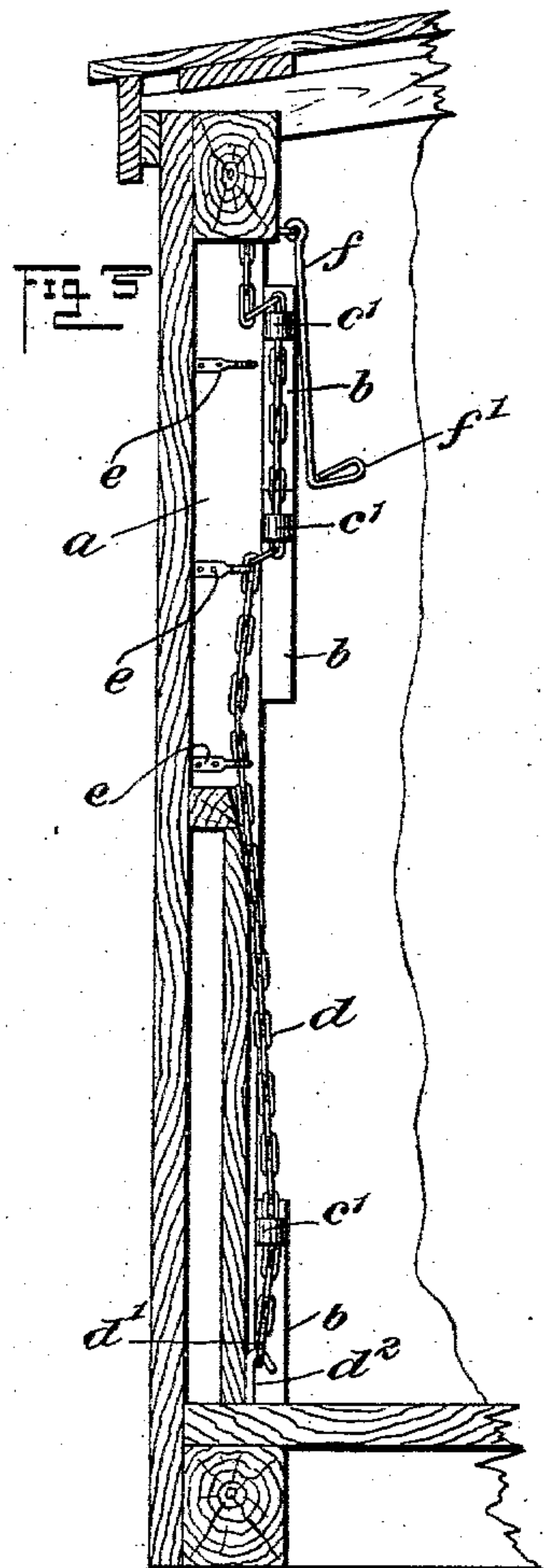
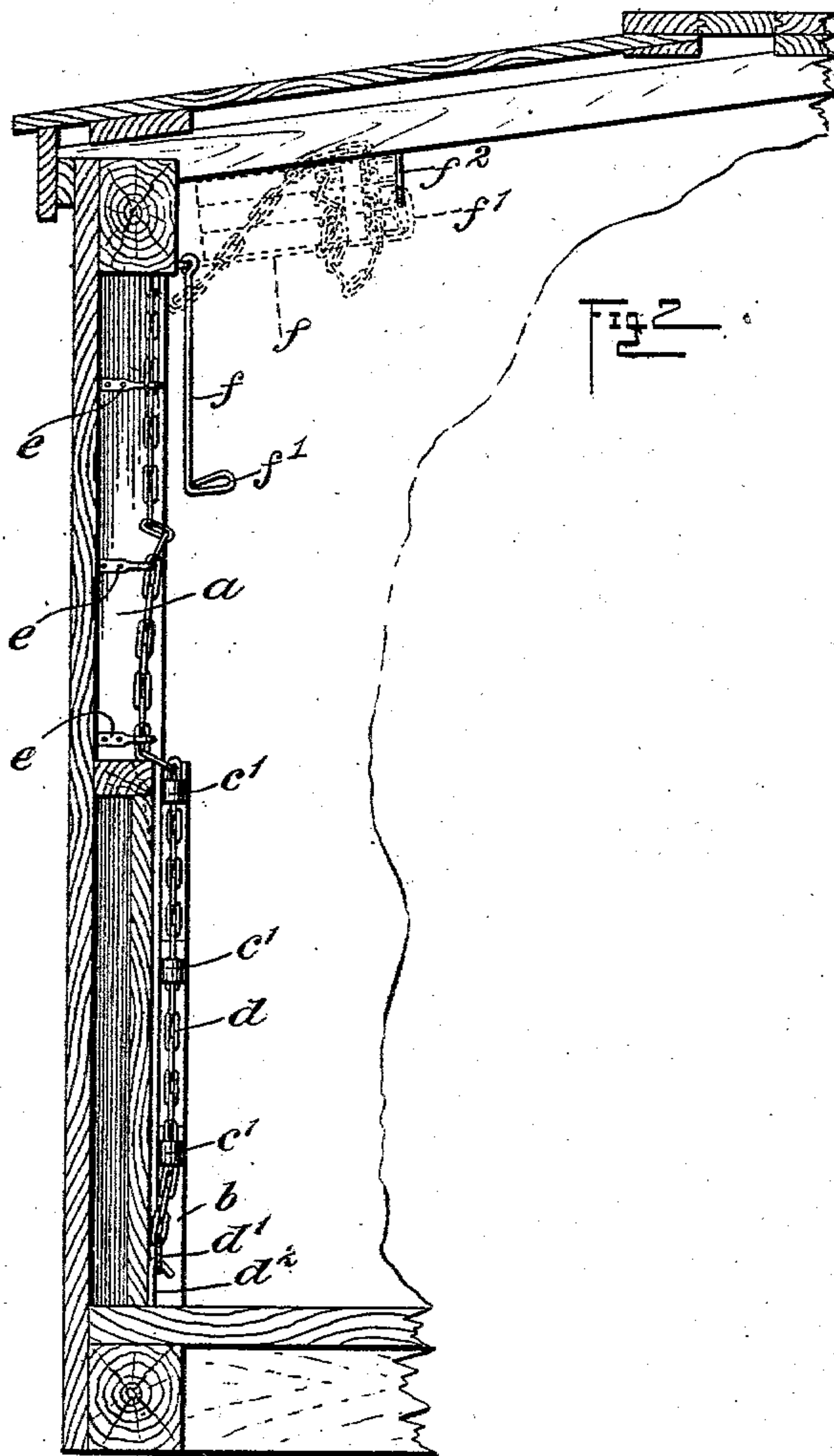
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UNITED STATES PATENT OFFICE.

ALVA TOMPKINS STARK, OF GENEVA, NEW YORK.

GRAIN-DOOR.

SPECIFICATION forming part of Letters Patent No. 704,949, dated July 15, 1902.

Application filed February 21, 1902. Serial No. 95,066. (No model.)

To all whom it may concern:

Be it known that I, ALVA TOMPKINS STARK, a citizen of the United States, and a resident of Geneva, in the county of Ontario and State of New York, have invented a new and Improved Grain-Door, of which the following is a full, clear, and exact description.

This invention relates to what is known as a grain-door for freight-cars, it being an inner or auxiliary door adapted to be used when the car is loaded with grain in bulk, so as to form an extra-tight closure at the door and prevent the leakage of the grain.

The prime object of the invention is effectively to carry the grain and at the same time to avoid encumbering the car with devices which will be troublesome when the car is used for freight of other classes. A great objection to grain-doors previously devised is that they weaken the structure of the car and offer serious obstructions to loading the car with other materials.

My invention may be readily attached to the car, and when not in use it can be folded up under the roof entirely out of reach.

This specification is an exact description of one example of my invention, while the claims define the actual scope thereof.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a longitudinal section of a car, showing an interior view of the grain-door in elevation. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is a section on the line 3 3 of Fig. 1, showing the parts in a different position; and Fig. 4 is a section on the line 4 4 of Fig. 1.

My improved grain-door is formed of a number of horizontal sections *b*. These sections are here shown as three in number, although this may be increased or diminished at will. They are constructed preferably of wood, and when in operative position they are arranged to lie one above the other against the inner sides of the door-posts *a* of the car. The door-sections *b* are provided with vertical grooves *b'* in each side of their end portions, and in these grooves are fitted lock-plates *c*, which project upward above the respective door-

sections in pairs, so that the extended upper ends of one pair of lock-plates *c* may engage in the lower ends of the grooves *b'* in the section of the door just above. This is illustrated in Fig. 1. When therefore the sections *b* of the door are engaged together, as shown in Fig. 1, and the lock-plates *c* are engaged in the grooves *b'*, a tight connection is effected and the grain may be effectively retained.

The sections of the door are held in closed position, as shown in Fig. 1, or in various other adjustments, as will be hereinafter fully explained, by means of chains *d* and certain coacting devices, which will now be described. The chains *d* are located one at the inner side of each door-post and are permanently fastened to the framing of the car at the top of the door. Eyes *d'* on the lower ends of the chains *d* are adapted to be engaged with hooks *d''* when the grain-door is in active employment. The hooks *d''* are fastened in the floor of the car immediately adjacent to the door-posts *a* and at the inner sides thereof. The arrangement is such that when the parts *d'* and *d''* are engaged the chains *d* are left with a certain degree of slackness, as is indicated in the drawings.

The door-sections *b* are provided with eyes or guides *c'*, and these are preferably integral extensions of the lock-plates *c*; but this is not essential. It is only essential that the guide-eyes project from the ends of the door-sections. The eyes *c'* loosely receive the chains *d*, and thus the sections of the door are connected with the chains and may be adjusted at will.

Fastened to the inner sides of the door-posts *a* are a number of hooks *e*. (Here shown to be three in number.) Now in order to fasten the door-sections securely in place, assuming that they are moved down to the closed position shown in Figs. 1 and 2, the chains *d* should be passed back of the lowermost hooks *e* at each side of the door, and then they should be drawn as tight as possible and the hook *e* next above engaged with the links of the chains, so as to hold the chains taut. It will be observed that the bills of the hooks *e* are placed inward of the plane in which the door-sections *b* lie, and consequently the hooks and chains acting together in the manner specified

draw the door-sections tightly against the door-posts.

In loading or unloading the car if it be desired to decrease the height of the grain-door this may be done in the manner indicated by the dotted lines in Fig. 1 and the full lines in Fig. 3—that is to say, by raising one or more of the door-sections upward to the top part of the door—the eyes c' of the door-sections being slid on the chains d . Then by engaging the chains with the proper hooks e the dropping of the door-sections b will be prevented. When the grain is shoveled into the cars—for example, to the height of one of the sections b , (see Fig. 3)—another section b may be dropped and the shoveling of the grain continued, and finally the last section may be dropped and locked into place and the grain put into the car until the car is fully loaded.

Fastened to the framing of the car at the top of the door and at each side thereof are two arms f , which are pivotally attached to the door and which terminate in laterally-bent eyes f' . These arms f may be allowed to hang down, as shown by full lines in Fig. 3, or they may be thrown upward when desired, as indicated by the dotted lines in Fig. 2, and engage with hooks f^2 , fastened to the roof of the car, so as to hold the arms raised. These devices are for the purpose of holding the sections of the grain-door when the door is not in use. To effect this adjustment, the eyes d' should be disconnected from the hooks d^2 and the door-sections b folded flat against each other, as the dotted lines in Fig. 2 show. After having been raised to the position shown the arms f should be thrown up and engaged with the hooks f^2 , and thus will hold the door raised firmly in varied positions. It will be observed that when this adjustment is effected the sections of the door all lie above the door-opening, and the door is in no way an incumbrance in loading or unloading the car with freight of any sort. If desired, the bottom section (shown in Fig. 3) may be raised with the other sections, thus leaving the door open at the bottom and facilitating discharging the cargo into chutes or hoppers.

Various changes in the form and details of my invention may be resorted to at will without departing from the spirit of my invention. Hence I consider myself entitled to all such forms as may lie within the intent of my claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A grain-door, comprising a door-section, a chain or other flexible structure mounted on the car, on which chain the door-section is adjustably carried, and means for releasably holding the chain taut.

2. A grain-door, comprising a door-section, a chain or other flexible structure mounted on the car, on which chain the door-section is carried, said chain extending alongside of the

door, means for removably attaching the lower end of the chain to the car, and means for holding the door-section raised against the roof of the car.

3. A grain-door, comprising a plurality of door-sections, chains or other flexible structures mounted on the car at the sides of the door-opening, with which chains the door-sections have sliding connection, and means for releasably holding the chains taut.

4. A grain-door, comprising a door-section, a chain or other flexible structure mounted on the car, adjacent to the door-opening, with which chain the door-sections have sliding connection, a hook fastened to the lower part of the car releasably to hold the lower end of the chain, and means for holding the door-sections raised to the roof of the car.

5. A grain-door, comprising a plurality of sections, chains or other flexible structures with which the door-sections have sliding connection, said chains having their upper ends fastened permanently to the car and their lower ends removably connected thereto, and means adjacent to the roof of the car for holding the door-sections raised.

6. A grain-door, comprising a plurality of sections, chains or other flexible structures with which the door-sections have sliding connection, said chains having their upper ends fastened permanently to the car and their lower ends removably connected thereto, and means adjacent to the roof of the car for holding the door-sections raised, said means comprising an arm mounted to swing on the car and a hook in the roof of the car to be engaged by the arm.

7. A grain-door, comprising a plurality of sections adapted to lie one above the other to form a complete door, chains or other flexible structures located one at each side of the door and having the door-sections independently slidable thereon, and means for varying the tension of the chains.

8. A grain-door, comprising a plurality of sections adapted to lie one above the other to form a complete door, chains or other flexible structures located one at each side of the door and having the door-sections independently slidable thereon, and means for holding the chains taut, said means comprising hooks fastened to the door-posts and adapted to have the chain drawn under one and engaged with the other.

9. A grain-door, comprising a plurality of sections adapted to lie one above the other to form a complete door, chains or other flexible structures located one at each side of the door and having the door-sections independently slidable thereon, means for holding the chains taut, said chains being permanently fastened at their upper ends and removably engaged with the car at their lower ends, and means at the top of the door for holding the door-sections raised, when desired.

10. A grain-door, comprising door-sections

adapted to lie one above the other and having grooves therein, and lock-plates fitted in the grooves and projected beyond the sections, whereby said projected portions may be entered into the grooves of the adjacent sections.

11. A grain-door, comprising door-sections adapted to lie one above the other, lock-plates fastened to the door-sections and projected beyond the sections to receive between them the adjacent door-sections, guide-eyes attached to the lock-plates and projecting from the ends of the door-sections, and means loosely received in said guide-eyes, whereby to carry the door-sections.

12. A grain-door, comprising door-sections adapted to lie one above the other, lock-plates

fastened to the door-sections and projected beyond the sections to receive between them the adjacent door-sections, guide-eyes attached to the lock-plates and projecting from the ends of the door-sections, means loosely received in said guide-eyes, whereby to carry the door-sections, said means consisting in chains located one at each side of the door, and means for removably holding the chains taut.

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

ALVA TOMPKINS STARK.

Witnesses:

D. B. BACKENSTORE,
LEWIS W. KEYES.