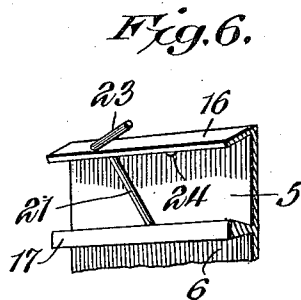
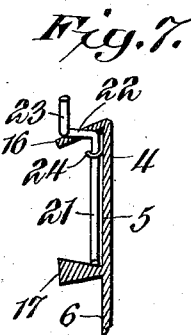
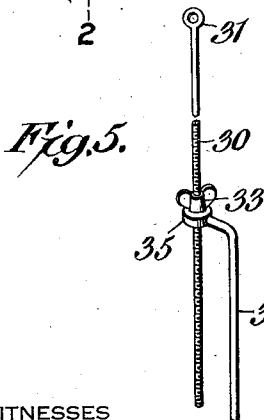
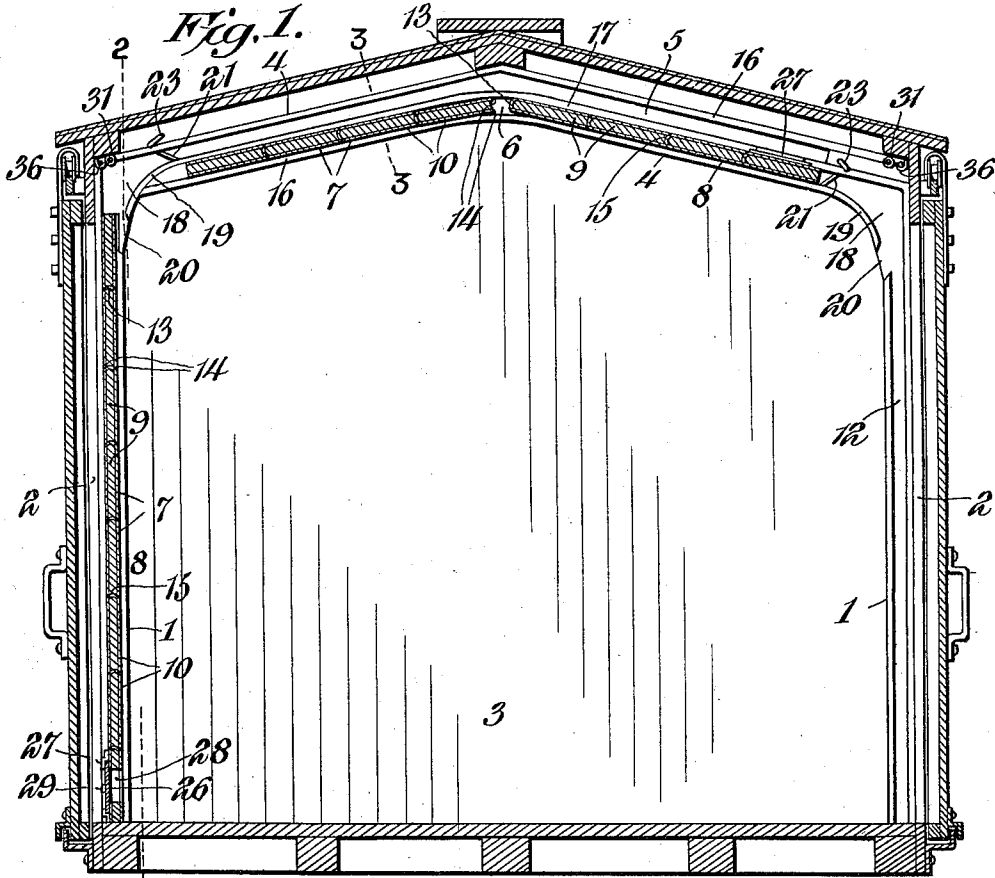


1,027,971.

Patented May 28, 1912.

2 SHEETS-SHEET 1.



WITNESSES

Howard D. Orr.
H. J. Riley.

Willard W. Allen, INVENTOR,

BY

E. G. Siggers.

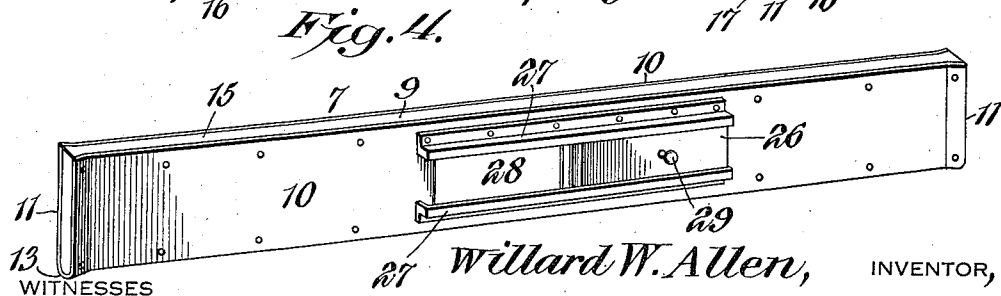
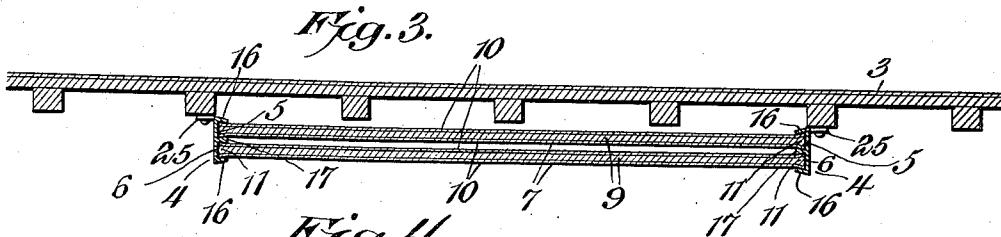
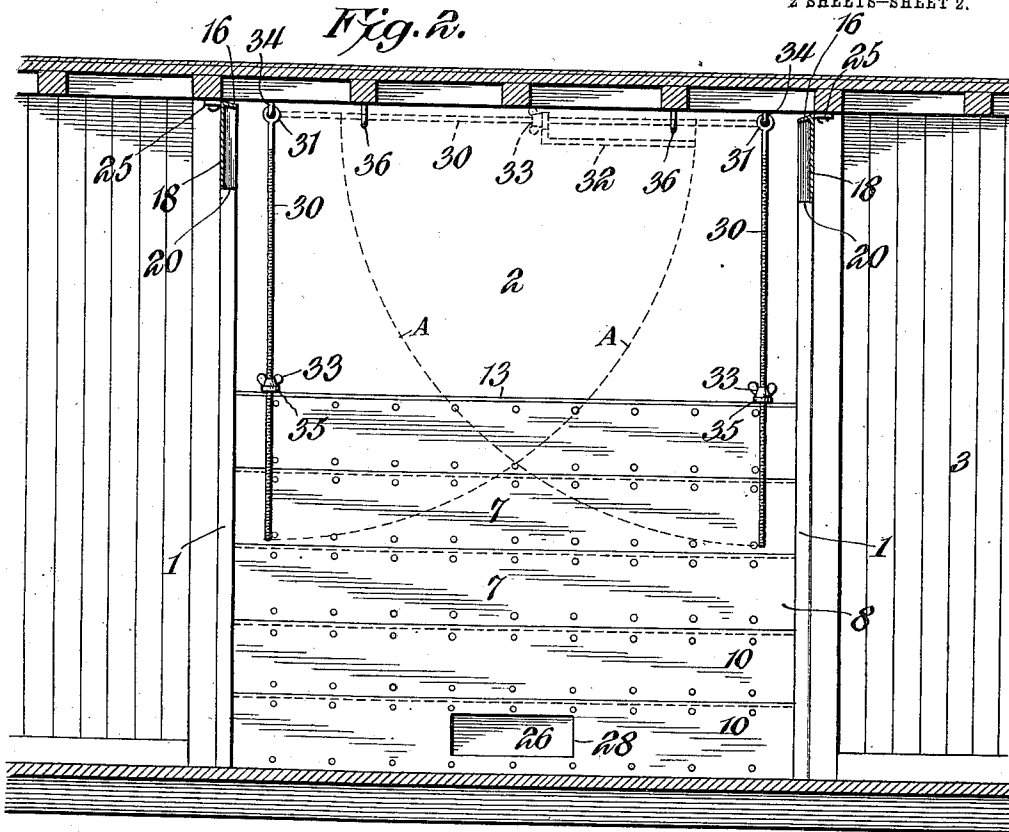
ATTORNEY

W. W. ALLEN.
GRAIN DOOR FOR CARS.
APPLICATION FILED MAY 9, 1911.

1,027,971.

Patented May 28, 1912.

2 SHEETS—SHEET 2.



WITNESSES
Howard D. Orr.
H. J. Riley.

Willard W. Allen, INVENTOR,
BY *C. G. Siggers*, ATTORNEY

UNITED STATES PATENT OFFICE.

WILLARD W. ALLEN, OF PRETTY PRAIRIE, KANSAS.

GRAIN-DOOR FOR CARS.

1,027,971.

Specification of Letters Patent.

Patented May 28, 1912.

Application filed May 9, 1911. Serial No. 626,027.

To all whom it may concern:

Be it known that I, WILLARD W. ALLEN, a citizen of the United States, residing at Pretty Prairie, in the county of Reno and State of Kansas, have invented a new and useful Grain-Door for Cars, of which the following is a specification.

The invention relates to improvements in grain doors for freight cars.

The object of the present invention is to improve the construction of grain doors for freight cars, and to provide a simple, inexpensive and efficient grain door composed of a plurality of separate sections, adapted when closed to form a grain tight door, and capable of being readily handled to transfer them from their closed to their open position.

A further object of the invention is to provide a grain car door, adapted when not in use to be securely retained in an overhead position at the top of the car, and capable, should any of its sections become broken or worn, of having the same readily removed and replaced by new sections.

It is also the object of the invention to provide a sectional car door of this character, capable of being securely locked in its closed position and adapted to be varied in size to suit the commodity loaded in a car.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is a transverse sectional view of a car equipped with grain doors, constructed in accordance with this invention, one of the doors being open and the other closed. Fig. 2 is a vertical longitudinal sectional view on the line 2—2 of Fig. 1. Fig. 3 is a similar view on the line 3—3 of Fig. 1. Fig. 4 is a detail perspective view of the bottom section of the grain door, the same being inverted. Fig. 5 is a similar view of one of the locking devices. Fig. 6 is a detail perspective view of a portion of one of the channel guides,

illustrating the construction of the dog for retaining the sections in the top branches of the guides or ways. Fig. 7 is a vertical sectional view of the same.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

In the accompanying drawings in which is illustrated the preferred embodiment of the invention, 1—1 designate vertical portions or branches of the channel guides, located at the opposite door openings 2 of a freight car 3 and provided with transverse top portions 4, extending entirely across the top of the car and having upper and lower grooves or ways 5 and 6, arranged in pairs and adapted to receive the sections 7 of opposite grain doors 8, whereby both of the grain doors 8 may be arranged in an open position at the top of the car when not in use.

Each of the sections is preferably constructed of a wooden body 9 and a casing or covering 10 of sheet steel, or other suitable material. The ends 11 of the sections are inwardly tapered wedge-shaped or dove-tailed to interlock with dove-tailed grooves or ways 12 of the channel guides, which have angularly related converging side walls. The sheet metal covering or casing 10 conforms to the configuration of the dove-tailed ends, and it is composed of two sides and a connecting portion 13, which is rounded to form an upper tongue. The edges 14 of the sheet metal sides project slightly at the other longitudinal edge 15 of the wooden body portion, which is grooved, the grooved edge 15 and the projecting longitudinal edges 14 forming a groove to receive the rounded portion or tongue of the adjacent section, whereby the sections form tongue and groove joints and render the door grain tight. Also the interlocking of the dove-tailed ends of the sections with the channel guides prevent the sections, when subjected to pressure, from becoming disengaged from the guides.

The top transverse portions of the channel guides are oppositely inclined to conform to the configuration of the top of the car, and each is composed of top, bottom and intermediate flanges 16 and 17 and a connecting vertical rear wall, as clearly illustrated in Fig. 3 of the drawings. The top and bottom flanges 16 are inclined and converge from the rear wall, and the inter-

mediate flange 17 is wedge-shaped in cross section and presents inclined side faces, which converge toward their respective co-acting flanges 16. The top portions and the vertical side portions of the channel guides are connected by enlarged portions 18, having angularly related outer walls and a curved inner wall 19, which is provided with an entrance slot 20, adapted to permit the sections to be introduced into and removed from the grooves or ways in an edge-wise position. The sections when in their normal position in the guides in opening and closing the grain door present flat side faces in the openings and are adapted to slide over the same without catching on the edges thereof, but when it is desired to remove a section to replace it by a new section, or for any other purpose, the said section is carried to the enlarged connecting portion 18, and its lower edge is drawn inward to the entrance opening 20, and the corner formed by the outer flanges of the top and side portions of the guides provide sufficient space to permit such movement of the sections to be detached, and the said sections may be readily passed through the openings 20.

In order to retain the sections of the grain doors in their over-head positions, the transverse portions of the channel guides are equipped with dogs 21, located at the outer ends or portions of the grooves or ways of the transverse portions of the channel guides and hinged at the top and inclined downwardly and inwardly from the tops of their respective grooves toward the center of the car, as clearly shown in Figs. 1 and 6 of the drawings. The dogs act as gravity catches, and they permit the sections of the car doors to pass readily beneath them in moving the sections into the transverse top portions of the channel guides, and the said dogs drop by gravity and lock the sections against backward or downward movement. Each dog has a horizontal pivot portion 22, piercing one of the walls or flanges of the channel guides and having an exterior operating arm 23. A support 24, which is approximately hook-shaped, is mounted adjacent to each of the dogs in the groove or way in which the same operates, and the said support is adapted to receive the free end of the dog to hold the same in an elevated position to permit the sections of the car door to pass beneath the door in transferring them from their over-head position to the vertical portions of the channel guides. The dogs and their supports are located at the inner terminals of the enlargements 18, there being sufficient space at those points to permit the sections to clear the supports and the dogs. The channel guides are provided with ears 25 for the reception of fastening devices for securing

them to the frame-work of the car, but they may be secured to the same in any other desired manner and they reinforce and strengthen the car and occupy a maximum amount of space.

The lower section of the grain door is preferably provided with a flat lower edge to fit against the floor of the car, and it is equipped with a sliding door 26, mounted in suitable guides 27 and arranged to cover and uncover an opening 28, adapted to be opened to relieve the grain door of pressure. The supplemental sliding door is equipped with a suitable handle 29 to enable it to be conveniently operated. The size or height of the grain door may be varied by employing more or less of the sections to suit the commodity to be loaded in a car, and the sections not in use are supported out of the way in the top transverse portions of the channel guides. The sections in use are secured in their closed position by locking devices, arranged in pairs and located at opposite sides of the door openings and each comprising a threaded rod 30, hinged at its upper end 31 to the car at the top thereof and receiving an adjustable clamp 32, which is secured in its adjustment by means of a thumb nut 33, engaging the threads of the rod 30. The rod is preferably provided at its upper end with an eye, which is linked into an eye bolt 34, or other suitable attaching means. The adjustable clamp, which is approximately L-shaped, is provided at the end of its short arm with an eye 35, which is slidably arranged on the rod 30, and its long arm, which is arranged in parallelism with the rod 30 co-acts with the same to form a fork for straddling the upper portion of the grain door. The locking devices are adapted to swing on the dotted lines A in Fig. 2 of the drawings to engage them with and disengage them from the grain door, and they are supported in an elevated position out of the way by means of hooks 36, or other suitable supports, mounted on the car at the top thereof and arranged to receive the rods 30 as indicated in dotted lines in Fig. 2.

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

1. The combination with a freight car having opposite door openings, of channel guides consisting of vertical portions arranged at opposite sides of the door openings, and transverse top portions having inclined top walls, dogs operating within the transverse top portions and having horizontal pivots piercing the top walls thereof, said dogs being provided with exterior operating means connected with the horizontal pivots, grain doors composed of sections slidable in the channel guides and arranged to lift the pivoted dogs when moved in one

direction and held against movement in the opposite direction by the said dogs.

2. The combination with a freight car having opposite door openings, of channel guides consisting of vertical portions arranged at opposite sides of the door openings, and transverse top portions, inclined dogs operating in the channel guides at the ends of the transverse top portions of the same and having exterior operating devices, grain doors composed of sections slidable in the channel guides and adapted to lift the pivoted dogs when moved in one direction and held against movement in the opposite direction by the said dogs, and supports mounted in the channel guides and arranged to hold the dogs in an elevated position to permit the grain door sections to slide in either direction.

3. The combination with a freight car having a door opening, of dove-tailed channel guides composed of vertical portions located at opposite sides of the door opening and closed at their lower ends, and transverse top portions closed at one end, and enlarged portions connecting the other ends of the transverse portions with the upper ends of the vertical portions, the enlarged connecting portions having curved inner walls provided with narrow openings, and a grain door consisting of sections slidably interlocked with the dove-tailed channel guides, the said enlarged connecting portions of the channel guides forming sufficient space above and beyond the narrow openings to permit the door sections to be turned and moved edgewise through the said openings to enable them to be introduced into and removed from the channel guides, said sections when in their normal position in the guides presenting flat side faces to the openings and adapted to slide over the same.

4. The combination with a freight car having opposite door openings, of dove-tailed channel guides composed of vertical portions located at opposite sides of the door openings and closed at their lower ends, transverse top portions also closed at one end and enlarged connecting portions having angularly related outer walls and curved inner walls, the latter being provided with narrow openings, and grain doors composed of separate sections slidably interlocked with the channel guides, the angularly related outer walls of the connecting

portions thereof forming sufficient space at the narrow openings to permit the door sections to be turned and passed edgewise through the openings in the inner walls, said door sections when in their normal position within the guides presenting their side faces to the openings and adapted to slide over the same.

5. The combination with a freight car having a door opening, of channel guides located at opposite sides of the door opening, and a grain door comprising separate sections slidable in the channel guides, each section consisting of a wooden body portion and a metallic casing constructed of sheet metal and composed of opposite sides and a connecting portion arranged at one of the longitudinal edges of the section and rounded to form a tongue, the opposite longitudinal edge of the body portion being provided with a groove, and the sides of the casing projecting from the body portion at opposite sides of the groove to receive the rounded portion of an adjacent section.

6. The combination of opposite guides or ways, a grain door composed of sections slidable in the guides or ways, and a locking device consisting of a hinged rod provided with threads, an adjustable jaw slidable on the rod and cooperating with the same to straddle and engage the grain door and extending downward along the inner and outer faces thereof, and a nut mounted on the rod and securing the clamp in its adjustment.

7. The combination of opposite guides or ways, a grain door composed of sections slidable in the guides or ways, a locking device comprising a hinged rod provided with screw threads, an approximately L-shaped jaw having an eye through which the rod passes, said L-shaped jaw and rod straddling the grain door and extending downwardly along the inner and outer faces thereof, a clamping nut mounted on the threaded rod and engaging the jaw, and means for supporting the locking device in an elevated position.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

WILLARD W. ALLEN.

Witnesses:

B. B. JORDAN,
ORA ALLEN.