No. 760,369. PATENTED MAY 17, 1904.

D. B. ARNOLD.

GRAIN DOOR FOR RAILWAY CARS.

APPLICATION FILED FEB. 11, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

Fig 1.

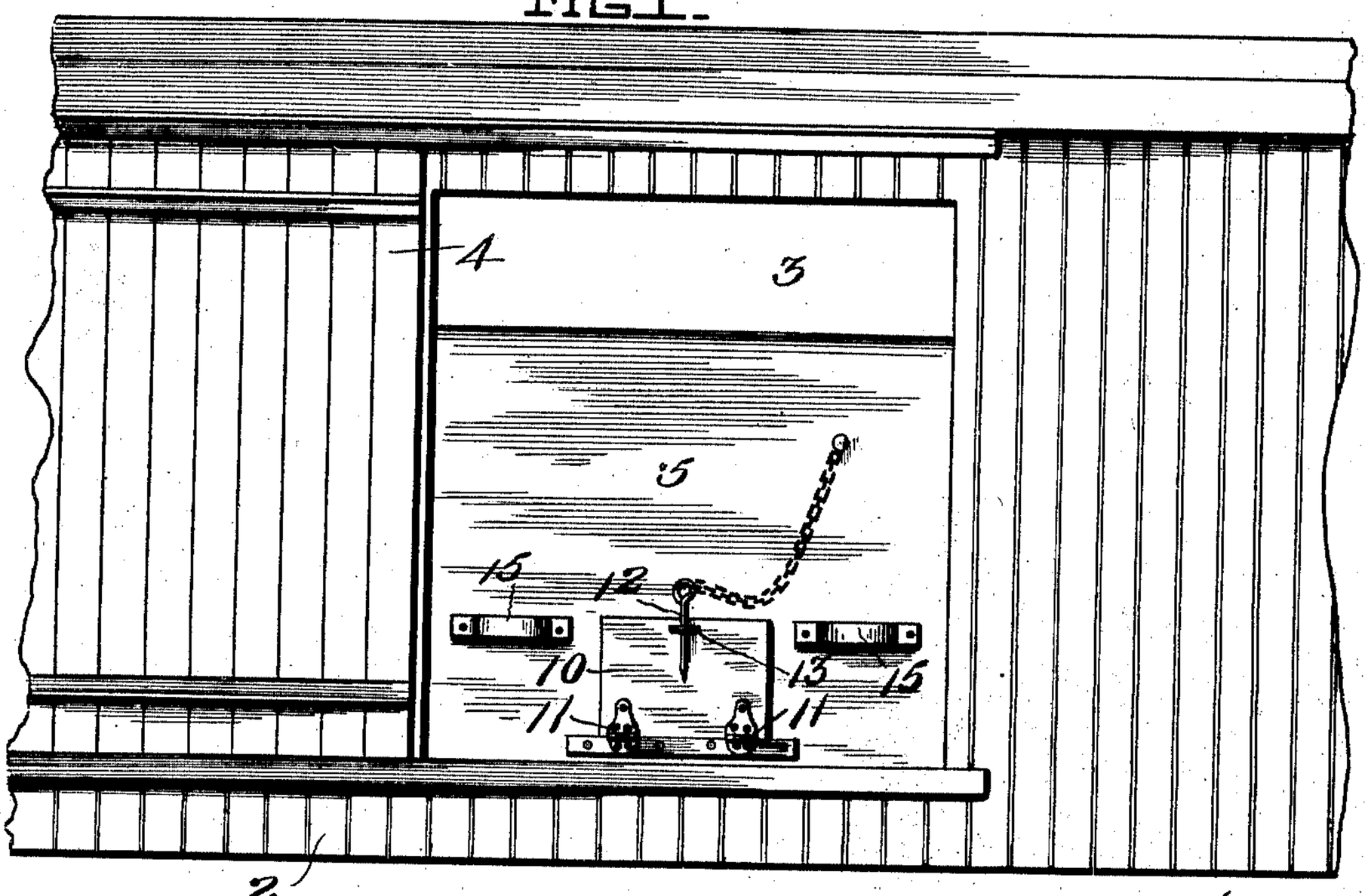
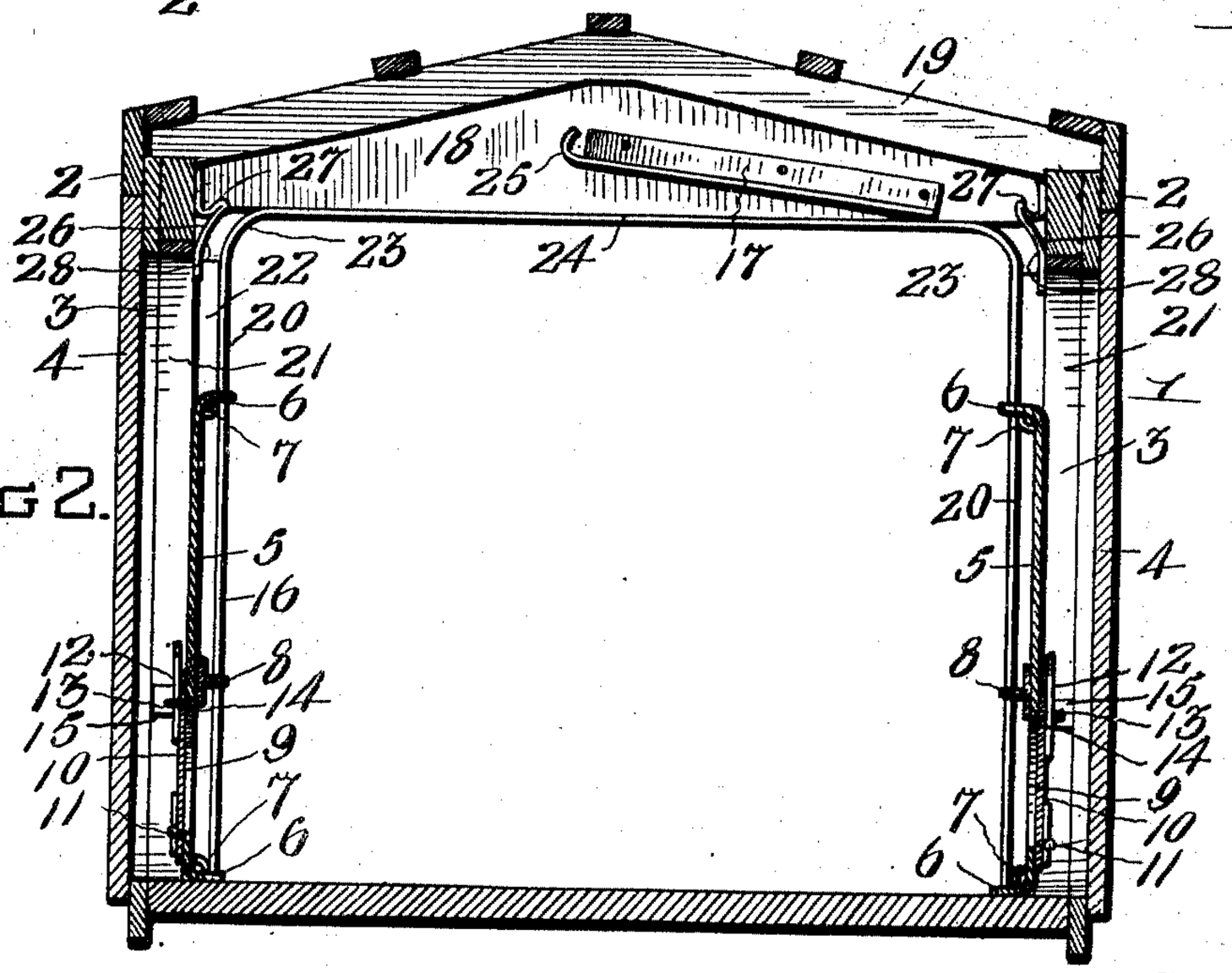


Fig 2.



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NO MODEL. 2 SHEETS—SHEET 2.

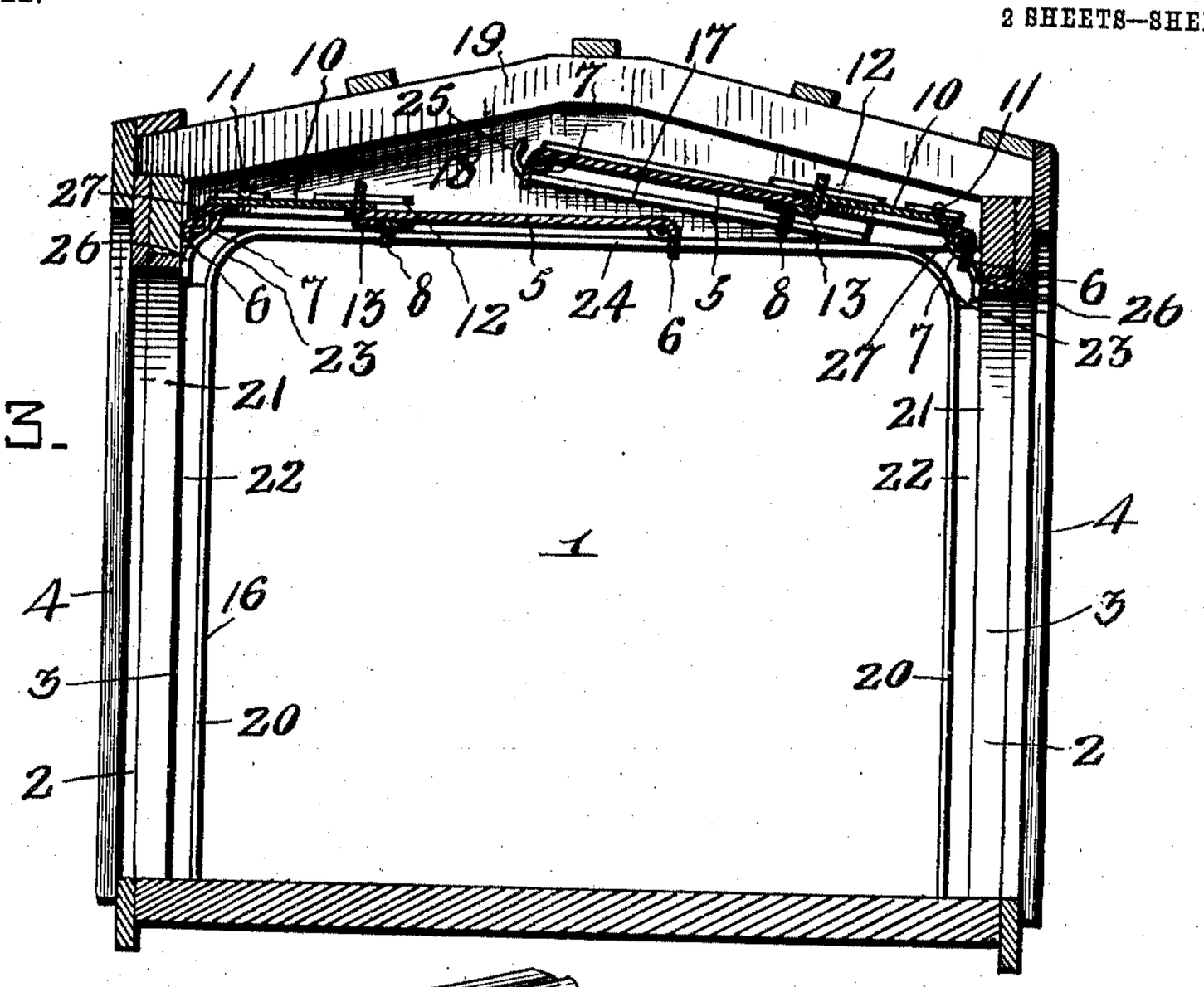


FIG. 3.

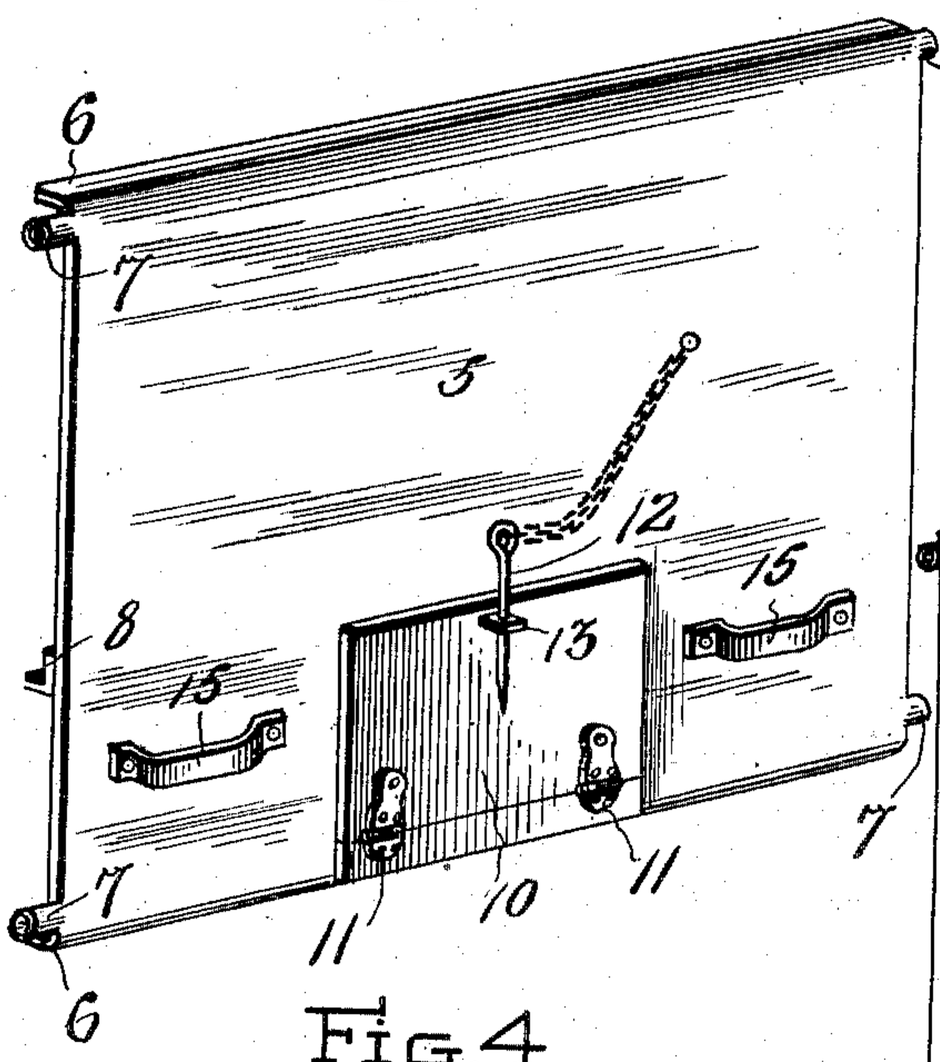
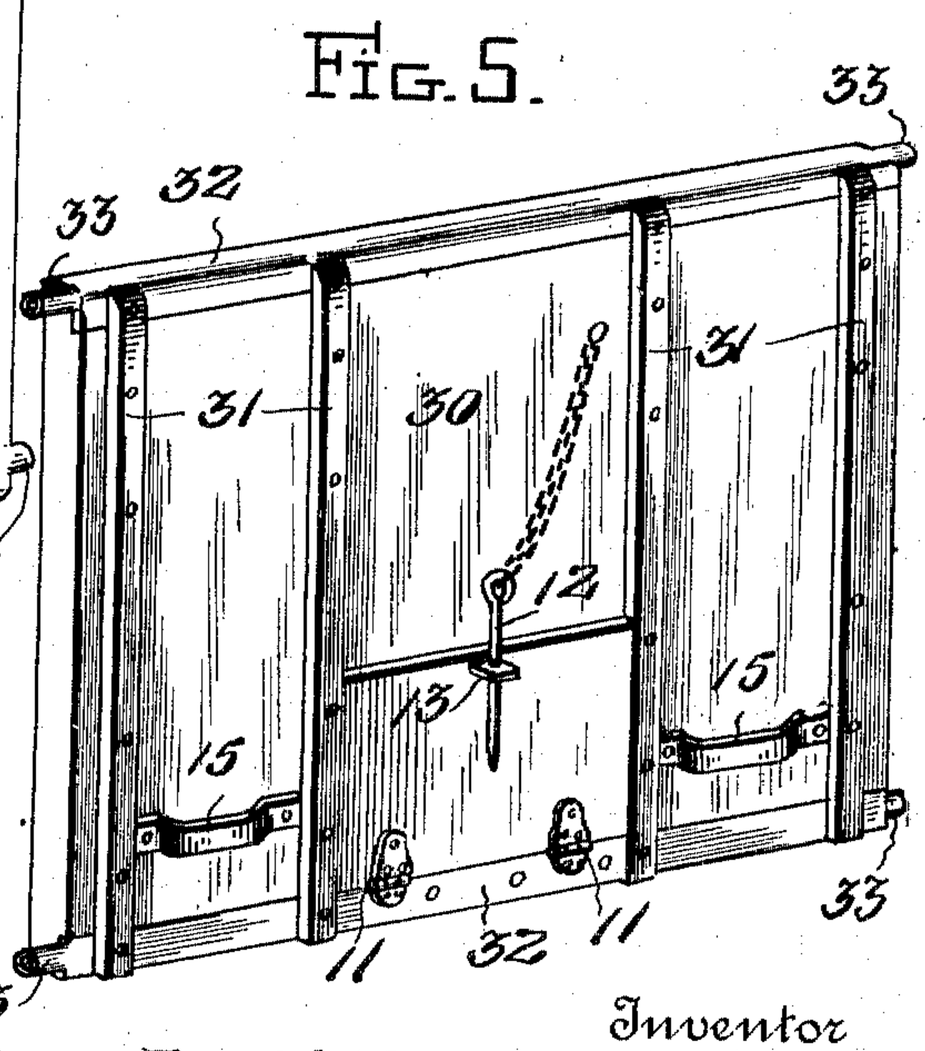


FIG. 4.

FIG. 5.



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No. 760,369. Patented May 17, 1904.

UNITED STATES PATENT OFFICE.

DAVID BENSON ARNOLD, OF TERRE HAUTE, INDIANA, ASSIGNOR OF ONE-HALF TO EDWIN ELLIS, OF TERRE HAUTE, INDIANA.

GRAIN-DOOR FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 760,369, dated May 17, 1904.

Application filed February 11, 1904. Serial No. 193,170. (No model.)

To all whom it may concern:

Be it known that I, DAVID BENSON ARNOLD, a citizen of the United States, residing at Terre Haute, in the county of Vigo and State of Indiana, have invented certain new and useful Improvements in Grain-Doors for Railway-Cars; and I do 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.

This invention relates to new and useful improvements in grain-doors for railway-cars; and it consists in certain novel features of construction, combination, and arrangement of parts, hereinafter fully described and claimed.

The object of my present invention is to improve and simplify the construction and operation of devices of this character, and thereby render them more efficient and durable in use and less expensive to manufacture.

In the accompanying drawings, Figure 1 is a side elevation of a portion of a railway-car, showing its ordinary door in an open position and my improved grain-door partially closing the door-opening. Fig. 2 is a vertical transverse sectional view through the car, the grain-doors in each of its sides being in their closed or lowered positions. Fig. 3 is a similar view with the grain-doors in their opened or raised position. Fig. 4 is a perspective view of one of the grain-doors. Fig. 5 is a similar view of a grain-door constructed of wood.

Referring to the drawings by numeral, 1 denotes a railway-car of any well-known or preferred construction provided in its sides 2 with the usual doorways or openings 3, which are adapted to be closed upon the outside by the ordinary doors 4 and upon the inside by my improved sliding grain-doors 5. Said grain-doors 5, as shown in Figs. 1 to 4, inclusive, are constructed of a single piece of sheet metal having its top and bottom edges bent at right angles to form longitudinal strengthening-flanges 6 and having at each of its corners integral portions which project horizontally beyond its side edges and are bent to form cylindrical pins or studs 7. Upon the inner side of each of these sheet-metal doors at about its center is a longitudinal strengthening-brace 8, of angle-iron, and in the center of the lower portion of each of said doors is an opening 9, which is adapted to be closed by an outwardly-swinging relief-door 10, hinged at its lower edge, as at 11, and adapted to be fastened in its closed position by a pin or keeper 12, which is inserted in a perforated lug or staple 13, projecting from the front of the door 5 and through an opening or slot 14, formed in the door 10, as shown. The grain-doors 5 are also provided upon their outer sides with handles 15 to facilitate raising and lowering the same. The grain-doors slide upon tracks 16 and 17, secured to the inner faces of the side walls 2 at each side of the openings or doorways 3 and to the rafters 18 of the top or roof 19 of the car. The said tracks 16, which are flat metal strips, extend continuously up one side of one of the doorways, then horizontally across the top of the car, and then vertically down the corresponding side of the opposite doorway. The vertical portions 20 of said tracks 16 are secured to the inside walls and are spaced from the door-jambs 21 of the doorways to form guideways 22, in which the pins or studs 7 of the doors 5 project and slide, and the portions 23 of the tracks 16 which are disposed between the vertical portions 20 and the horizontal portions 24 are curved, as shown, to permit the pins or studs 7 to slide freely from one portion to the other when the doors are moved from their lowered vertical position (shown in Fig. 2) to their elevated horizontal position, (shown in Fig. 3,) or vice versa. The said tracks 17, which are strips of angle-iron, are secured on the rafters 18 in an inclined position above one end of the horizontal portion 24 of the tracks 16 and form a continuation of the vertical and curved portions of the tracks 16 for one of the doors. By providing these tracks 17 the door on the side adjacent to which they are located will when in its elevated position rest upon the same, while the other door when elevated will rest upon the horizontal portion 24 of the tracks 16, as shown

in Fig. 3. This arrangement of the tracks for the doors permits of the use of doors of any height, since they may overlap each other to any extent when both are in their elevated positions. The tracks 17 have the outer or lower ends resting upon the horizontal portions 24 at their junction with the curved portions 23 of the tracks 16, and their inner and upper ends are bent to form stops 25, which prevent the uppermost pins or studs 7 on its coacting door from slipping off of the track.

In order to hold the grain-doors 5 in their elevated positions, the pins or studs 7 on the lower end of the doors are engaged with brackets 26, secured to the door-jambs 21 at points opposite the curved portions 23 of the tracks 16. These brackets 26 consist of strips of metal bent adjacent to their centers to form hooks 27 and having their lower portion 28 curved to act as deflectors and guides for the pins or studs 7. It will be seen that when the said pins or studs move up the guideways 22 they will strike said curved portions 28 of the brackets 26 and be directed inwardly around the curved portions 23 of the tracks 16. The hooked portions 27 of said brackets are so disposed that the doors after being elevated and supported upon the horizontal portions 24 of the tracks 16 or upon the tracks 17 may be easily shifted to throw the lowermost pins or studs 7 into the said hooks 27, while at the same time they will be securely held therein against casual displacement.

Instead of constructing the grain-doors 5 of sheet metal, as previously described, I may make them of wood, as shown in Fig. 5. In such cases the wooden door 30 is suitably strengthened by braces 31 and is provided along its top and bottom edges with angle-iron strips 32, the ends of which project beyond the side edges of the door and are bent to form cylindrical pins or studs 33, which correspond to the similar pins or studs 7 on the sheet-metal doors. In all other respects the construction of the door 30 is identical with that of the doors 5 previously described.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. In a grain-door for cars, the combination with the side walls formed with doorways at opposite points, of tracks extending horizontally across the top of said car and vertically down the sides of each of said doorways, inclined tracks above the horizontal portions of the first-mentioned tracks forming a continuation of the vertical portions of the first-mentioned tracks on one side of the car, and sliding doors coacting with said tracks, one of said doors when elevated being adapted to rest upon the horizontal portions of the first-mentioned tracks and the other of said doors when elevated, being adapted to rest upon said inclined tracks, substantially as described.

2. A grain-door for cars having its upper and lower ends turned at an angle to the face of the door and provided at the ends coincident with the corners of the door with integral projections forming pins to project into and slide in guideways for the door, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

DAVID BENSON ARNOLD.

Witnesses:

EDWIN ELLIS,

DANIEL V. MILLER.