

1,008,796.

Fig. 1

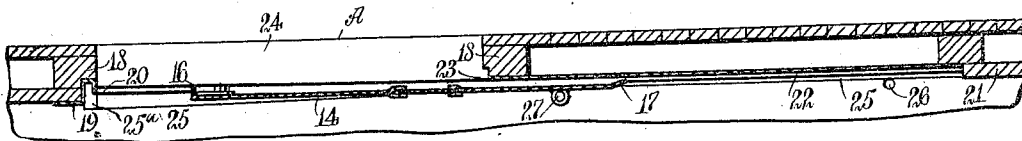
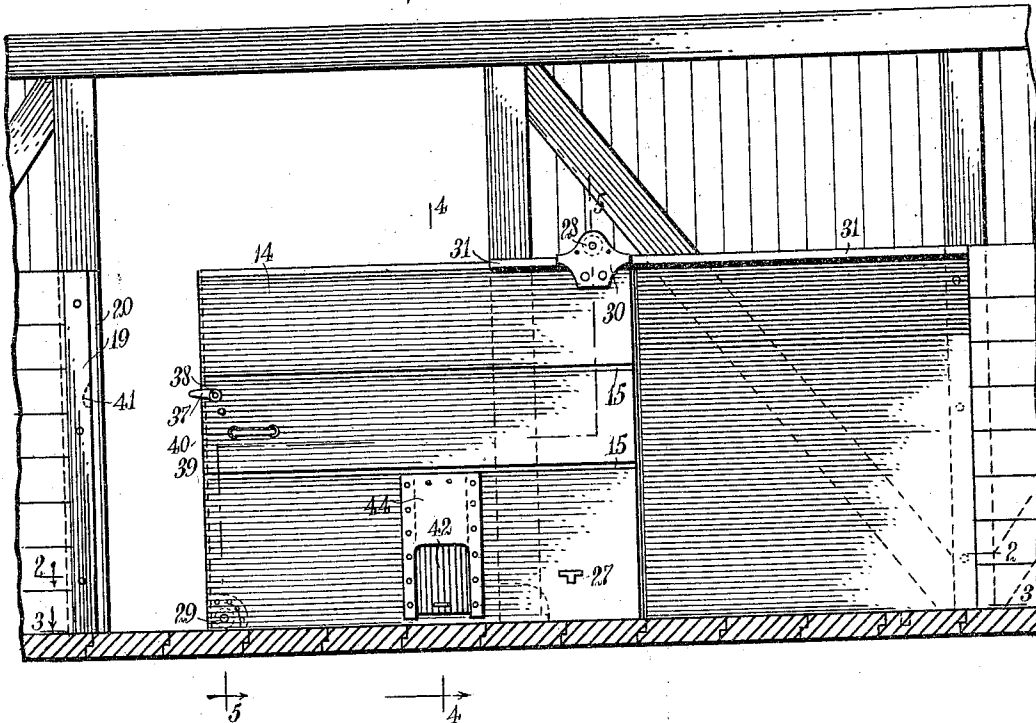


Fig. 2

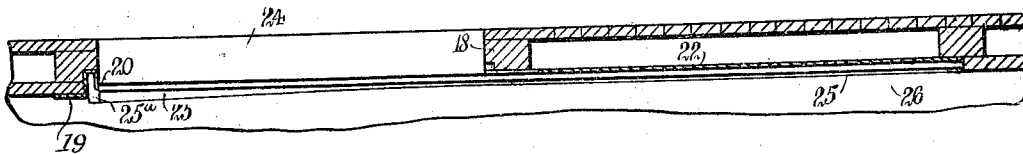


Fig. 3

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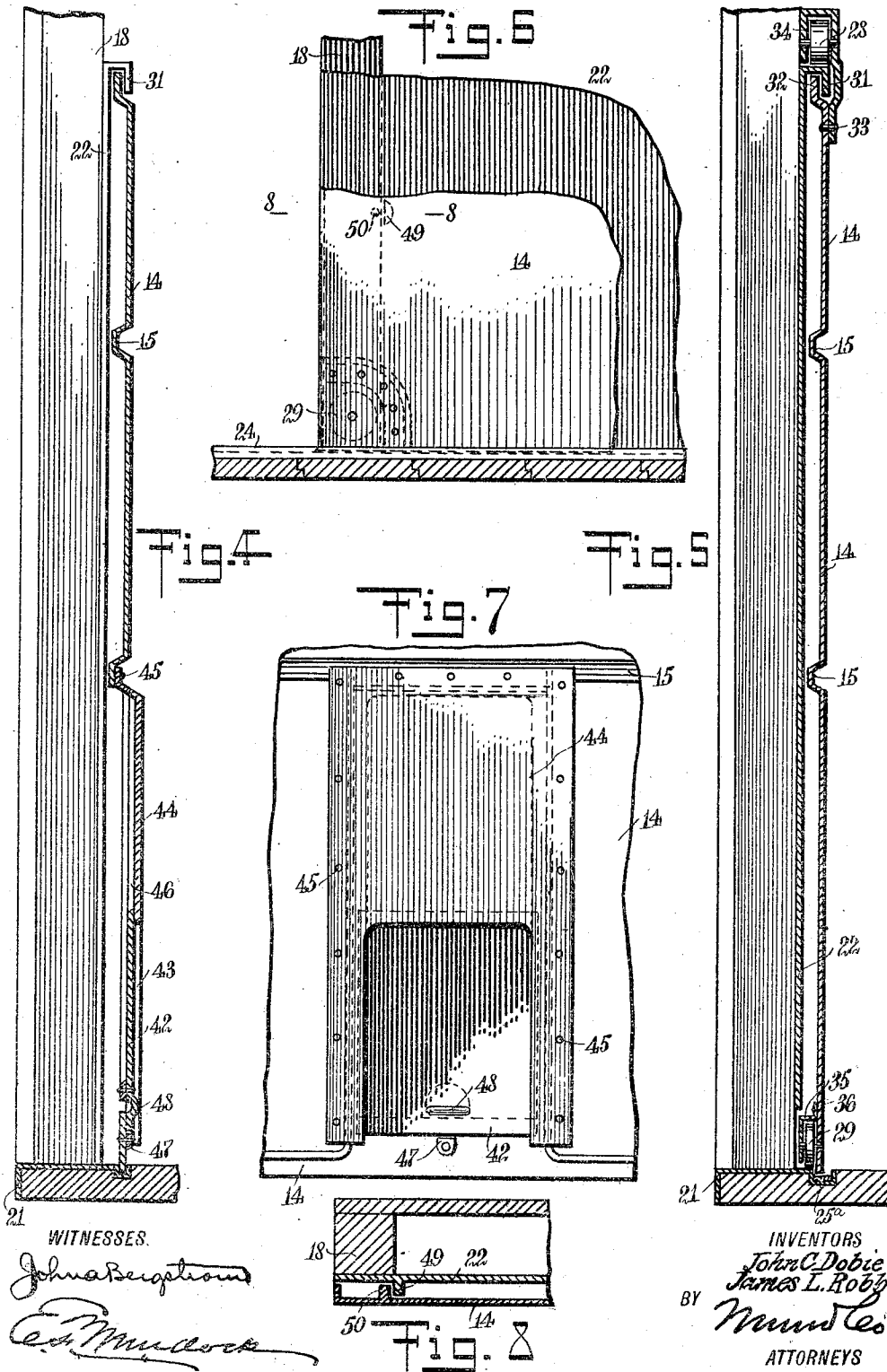
J. C. DOBIE & J. L. ROBB.
GRAIN CAR DOOR.

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1,008,796.

2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

JOHN C. DOBIE, OF ONAWA, IOWA, AND JAMES L. ROBB, OF AMISTAD, TERRITORY OF NEW MEXICO, ASSIGNORS OF ONE-TENTH TO M. EUGENE HOOVER, OF CARROLL, IOWA.

GRAIN-CAR DOOR.

1,008,796.

Specification of Letters Patent. Patented Nov. 14, 1911.

Application filed October 5, 1910. Serial No. 595,356.

To all whom it may concern:

Be it known that we, JOHN C. DOBIE, a resident of Onawa, in the county of Monona and State of Iowa, and JAMES L. ROBB, a resident of Amistad, in the county of Union and Territory of New Mexico, both citizens of the United States, have invented a new and Improved Grain-Car Door, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: to provide in a car of the character mentioned, a door constructed and arranged to preserve the thickness of the wall of the car when the said door is open; to provide a door and frame therefor adapted to prevent the warping or disarrangement of the door to permit leakage to pass the same; to provide a holding frame for a door, so arranged that the pressure on the door maintains the same in locked position; to provide a plate metal sill arranged to support the door and to form a guiding track therefor; to provide means for guiding and supporting in upright position the said door; to provide a door so arranged and constructed as to prevent obstructive lodgment of articles behind the door when the same is closed; to provide a chute or relief opening in said door adapted for the handling of grain or flowing freight; and to provide a construction which is simple, efficient and durable.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings, in which like characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a vertical section of a car equipped with a door and pocket therefor, constructed and arranged in accordance with the present invention, the view showing the inner surface of a car side; Fig. 2 is a horizontal section of the side of the car, the section being taken on the line 2—2 in Fig. 1; Fig. 3 is a like section of the side of the car, the section being taken on the line 3—3 in Fig. 1; Fig. 4 is a vertical section of a door constructed in accordance with the present invention, shown on an enlarged scale, the section being taken on the line 4—4 in Fig. 1; Fig. 5 is a vertical section of the floor and pocket therefor, the section being taken on the line 5—5 in Fig. 1; Fig. 6 is a detail view, on an enlarged scale, of the

lower forward edge of a door constructed in accordance with the present invention; Fig. 7 is a detail view, on an enlarged scale, showing the relief opening and closure therefor; and Fig. 8 is a detail view, in horizontal section, the section being taken on the line 8—8 in Fig. 6.

In the present construction, for the ordinary wooden door we have substituted a sheet or plate metal door 14. The door 14 is provided with a series of horizontally disposed ribs 15, and with end flanges 16 and 17. The flange 17 is inclined outwardly, as shown best in Fig. 2 of the drawings, to form a wedge member for the deflection of any article which may by accident become placed in the path of the door after the same has been closed. The flange 16 is extended from the body of the door outwardly at an angle of 90° to form a jamb flange for the closure edge of the door. The door opening A of the car is constructed in all essentials similar to the ordinary door opening for cars of the character mentioned. Each of the studs 18, 18 forming the opening is rabbeted at its inner edge. On the far side of the opening within the rabbet formed by the stud 18 is placed a channel S-bar 19, the channel 20 whereof forms a seat for the flange 16 of the door 14 when the same is closed over the opening A.

Adjacent to the opening A the car lining 21 is cut away to leave a section of the car frame, which is covered by a plate metal lining 22. The combined thickness of the lining 22 and the door 14 does not exceed the thickness of the lining 21, therefore, when the door 14 is retracted from the opening A with the flange 17 thereof resting against or adjacent to the lining 21, the inner surface of the car is at this point substantially flush. The edge 23 of the lining 22 is extended over the rabbet formed in the stud 18 adjacent to the said lining to form a stop member against which the flange 16 of the door strikes when the said door is retracted from the opening A.

For the ordinary wooden sill we have substituted a plate or sheet metal sill 24. In the sill 24 we have formed a groove 25 to receive the lower edge of the door 14 to guide the same. The groove 25 is increased in width at the far side of the door opening to permit the door 14 to swing outward at this point so that the flange 16 will pass the

flange of the channel 20. The groove 25 is extended parallel with the lining 22 and throughout the space covered thereby, and is provided at near the inner end thereof with a bolt hole 26 to receive a bolt 27 mounted on the door 14. The door 14 is by means of the bolt 27 held locked in its retracted position.

The door 14 is carried by rollers 28 and 29. The roller 28 is pivotally mounted in a suitable housing 30. The housing 30 is fixedly secured to the door 14, and is so disposed thereon that the roller 28 rests over upon the overturned edge of the lining 22 to form a flange 31. The overturned flange 31 also forms a guide channel for the edge flange 32 of the door 14. The flange 32 is projected outward to the flush of the ribs 15, 15. The housing 30 is preferably secured to the door 14 by rivets 33, 33, the said housing being shaped as shown in Fig. 5 of the drawings to form a channel in conjunction with the flange 32 for the flange 31. The upper portion of the housing 30 is overturned to form a depending member 34, between which and the opposite section of the housing 30 is pivotally mounted the carrying roller 28. The roller 28 is mounted on the upper and rear edge or corner of the door 14, while the roller 29 is mounted on the forward and lower edge of the said door 14. The roller 29 is pivotally mounted on the door structure and in a housing 35, riveted to the said structure at 36, as seen best in Fig. 5 of the drawings. By reason of the disposition of the two rollers 28 and 29 it will be seen that the door 14 is properly and sufficiently supported. The extension of the flange 32 and the lower edge of the door within the channel formed by the flange 31 and the groove respectively, serves to guide the said door and to prevent the swaying thereof.

The door 14 is locked in closed position by a latch 37. The latch 37 is pivoted at 38, and is provided with a handle extended to the outside of the door 14. The said handle is designated by the numeral 39 in Fig. 1, wherein it is shown in dotted lines. When the door is in opened position the latch 37 is rotated about the pivot 38 to rest on the stop or support 40. In the closed position of the door, when the same has been moved outward to insert the flange 16 in the channel 20, the latch 37 is rotated about the pivot 38 until it strikes within the mortise 41 provided in the side of the channel 20. It will be seen that while the latch 37 remains in the mortise 41 it is impossible to move the door 14 inward to permit the flange 16 to pass the side of the channel 20. It will be noted that when the door 14 is shifted outwardly the wheel 29 is suspended above the groove 25. To support the door at this point I have provided a carrying block 25^a.

As will be seen by reference to the draw-

ings, Figs. 3 and 5, the groove 25 is gradually increased in width to the adjacent Z-bar 19. The increased width permits the door to be swung inward so that the hook flange 16 at the vertical edge of the door may pass into the channel 20. This movement of the door carries the roller 29 off of the track in the sill 24. To support the door while the roller 29 is off the track, the block 25^a is placed in the groove upon which the lower edge of the door rests. When the door is in the position where the flange 16 is disposed in line with the groove 20, the door is pulled outward, the roller 29 passing over the sill 24 to support the door.

The door herein shown and described is usually employed on cars for the transportation of grain or dry flowing materials. These cars are usually loaded from the top, the door being closed. It is to relieve the pressure of the material upon the door that there is provided an auxiliary slide 42. The slide 42 is arranged to cover the opening 43 formed in the plate 44. The plate 44 is riveted in position upon the door 14 at 45, 45, and is guided in channels 46, 46 formed between the said plate and the said door, as best seen in Fig. 4 of the drawings. The slide 42 normally rests upon a stop 47 fixedly secured to the side of the door 14. The slide 42 is provided with a projection 48 for lifting the said slide.

In the operation of a door when thus constructed, and when the car is filled with grain, the preliminary step is to raise the slide 42 to permit the grain adjacent to the door to flow therefrom through the opening 43. When sufficient grain has been removed through the said opening the slide is closed, the latch 37 is thrown from engagement with the mortise 41 and the door 14 is forced inward until the flange 16 is disengaged from the side of the channel 20. In this position the door is moved to one side, being guided by the flange 31 and the groove 25 until fully retracted behind or outside the lining 22. In this movement it will be noticed that the flange 17, being inclined or wedge-shaped, extends the edge thereof behind the grain which rests against the lining 22, forcing the same outward into the body of the car. In this manner there is prevented an accumulation of grain or other material undesired behind the door and between the same and the lining 22.

When a car equipped with a door of the character shown and described is employed for other classes of freight, it will be noted that should any portion of the freight shift after the door 14 is closed to rest against the lining 22, the flange 17, when the said door is retracted, would pass behind and shove inwardly the said article resting upon the lining 22.

In Fig. 8 of the drawings we have shown

a modified form of construction for the lining 22, wherein is substituted a boss 49 extended from the side of the said lining adjacent to the edge of the door opening, to receive and form a stop for a pin 50 with which the door 14 is provided when constructed in the modified form. The construction thus modified provides for a greater rigidity and strength of the door 14 at the forward edge thereof.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. A grain car door, comprising a thin metal door having reinforcing members formed thereon and adapted to close the door opening of said car; a thin metal car lining adjacent to said door opening; a metal sill for said door opening having a guiding groove formed therein; carrying wheels for said door mounted thereon at the diagonally opposite corners thereof, one of said wheels tracking on said sill and the other of said wheels tracking on the upper edge of said lining; and an outwardly turned inclined flange mounted on the vertical inner edge of said door.

2. A grain car door, comprising a thin metal door having reinforcing members formed thereon and adapted to close the door opening of said car; a thin metal car lining adjacent to said door opening; a metal sill for said door opening having a guiding groove formed therein; carrying wheels for said door mounted thereon at the diagonally opposite corners thereof, one of said wheels tracking on said sill and the other of said wheels tracking on the upper edge of said lining; an outwardly turned inclined flange mounted on the vertical inner edge of said door; a vertically disposed jamb stop for said door having a channel vertically arranged therein; and an outwardly extended flange mounted on said door at the closing edge thereof adapted to fit within the channel in said jamb stop when the said door is in closed position.

3. A grain car door, comprising a thin metal door having reinforcing members formed thereon and adapted to close the door opening of said car; a thin metal car lining adjacent to said door opening; a vertically disposed jamb stop for said door having a channel vertically arranged therein; an outwardly extended flange mounted on said door at the closing edge thereof adapted to fit within the channel in said jamb stop when the said door is in closed position; and a metal sill for said door opening having a guiding groove formed therein, said groove having a wedge-shaped extension flared to the far side of said door opening and adjacent to said jamb stop to permit the swing of said door to insert the said flange within the channel in said stop.

4. A grain car door, comprising a thin metal door having reinforcing members formed thereon and adapted to close the door opening of said car; a thin metal car lining adjacent to said door opening and having an overturned flange depended from the upper edge thereof to form a channel to guide the said door; carrying wheels for said door pivotally mounted thereon at the diagonally opposite corners thereof, one of said wheels tracking on said sill and the other of said wheels tracking on the upper edge of said lining; an outwardly turned inclined flange mounted on the vertical inner edge of said door; a vertically disposed jamb stop for said door having a channel vertically arranged therein; and an outwardly extended flange mounted on said door at the closing edge thereof adapted to fit within the channel in said jamb stop when the said door is in closed position.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

JOHN C. DOBIE.
JAMES L. ROBB.

Witnesses:

SARA J. HOOVER,
CHRISTIANA M. ROBB.