

June 9, 1931.

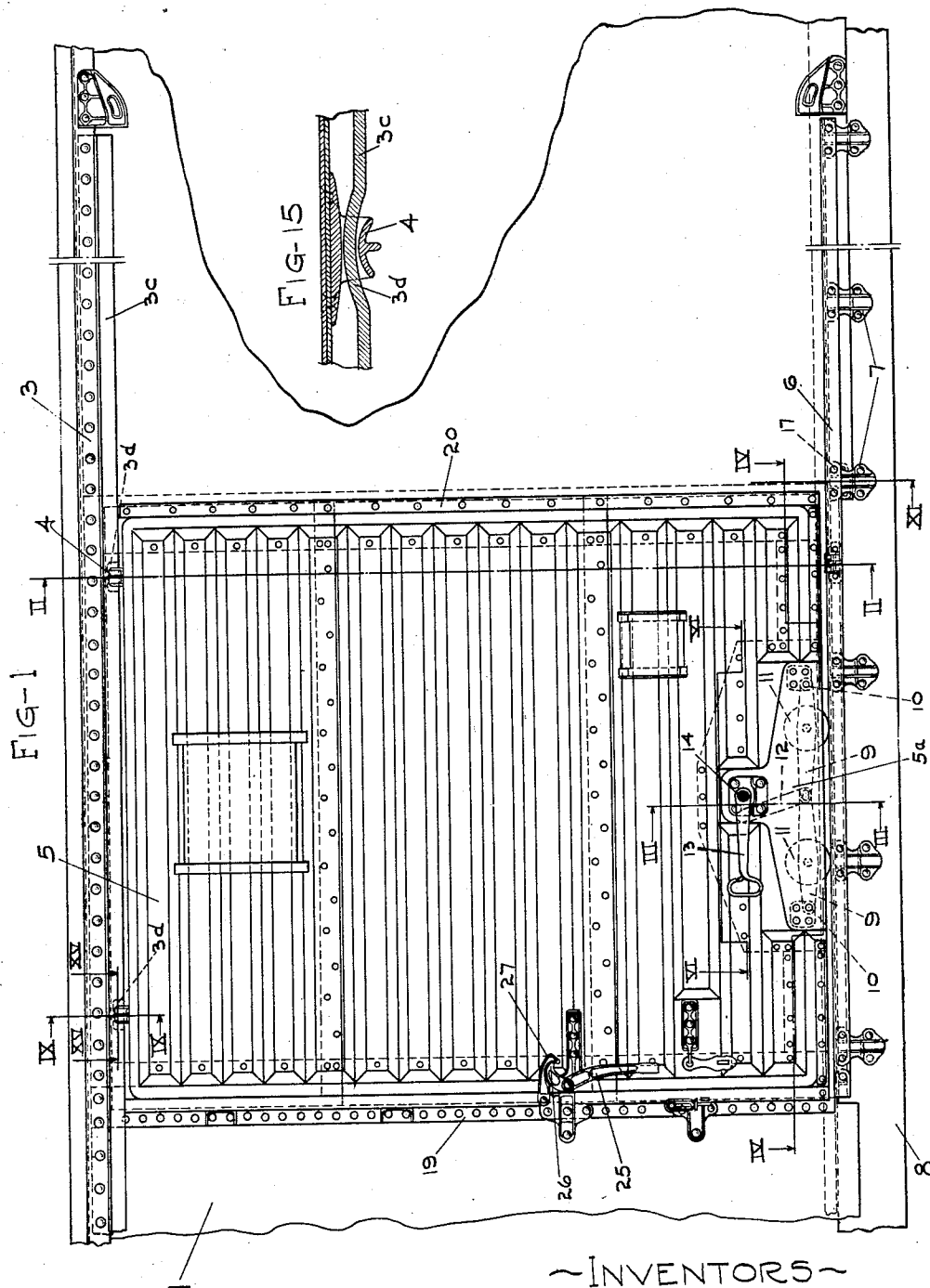
F. C. HEINEN ET AL

1,809,697

CAR DOOR

Filed Jan. 3, 1927

5 Sheets-Sheet 1



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FIG-2

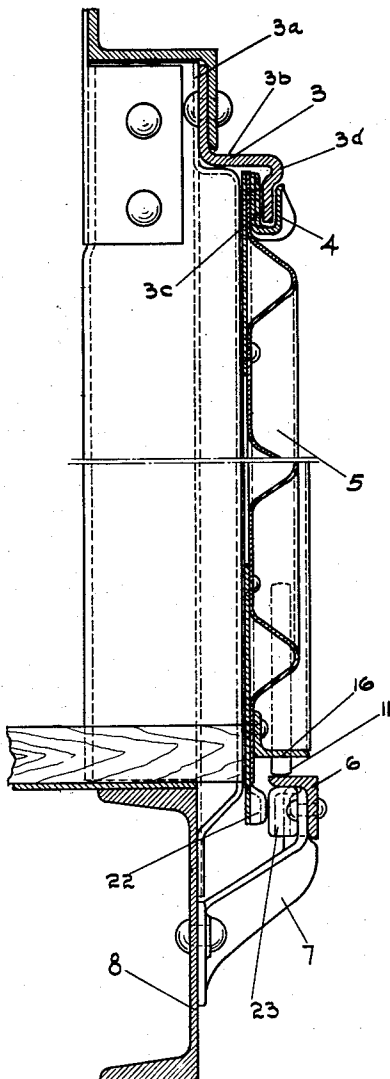
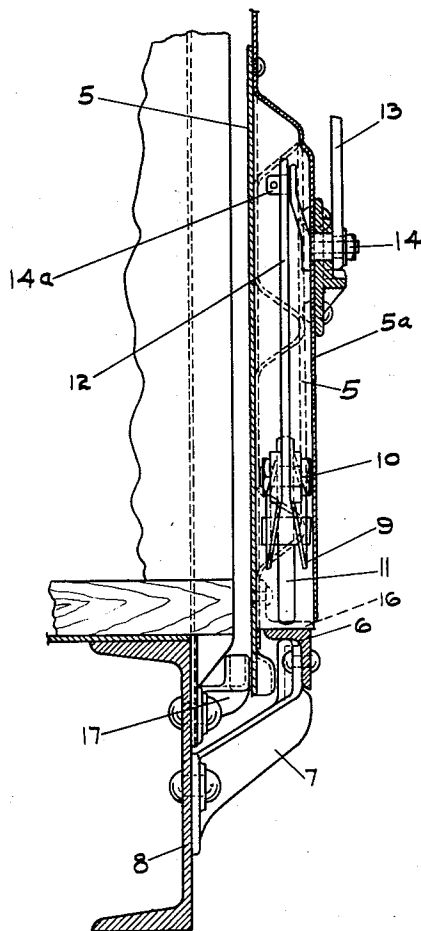


FIG-3



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FIG-4

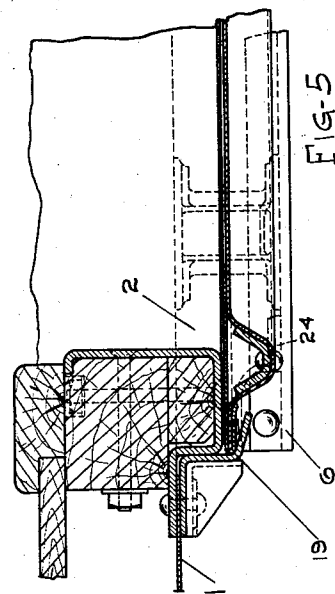


FIG-5

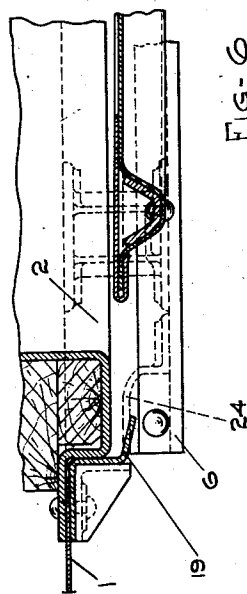
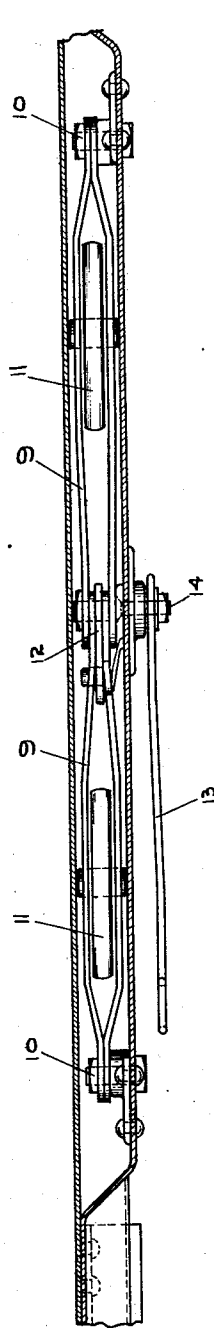


FIG-6



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Fig-7

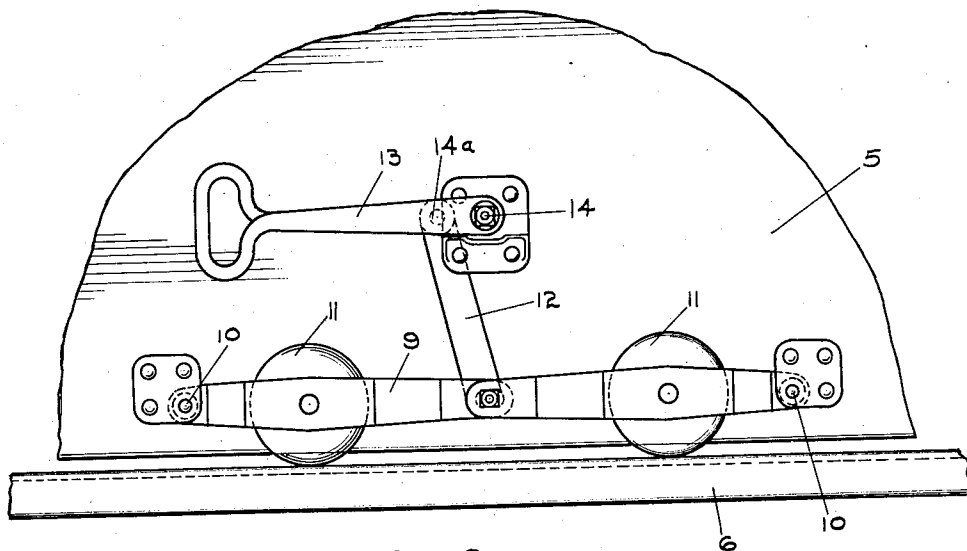
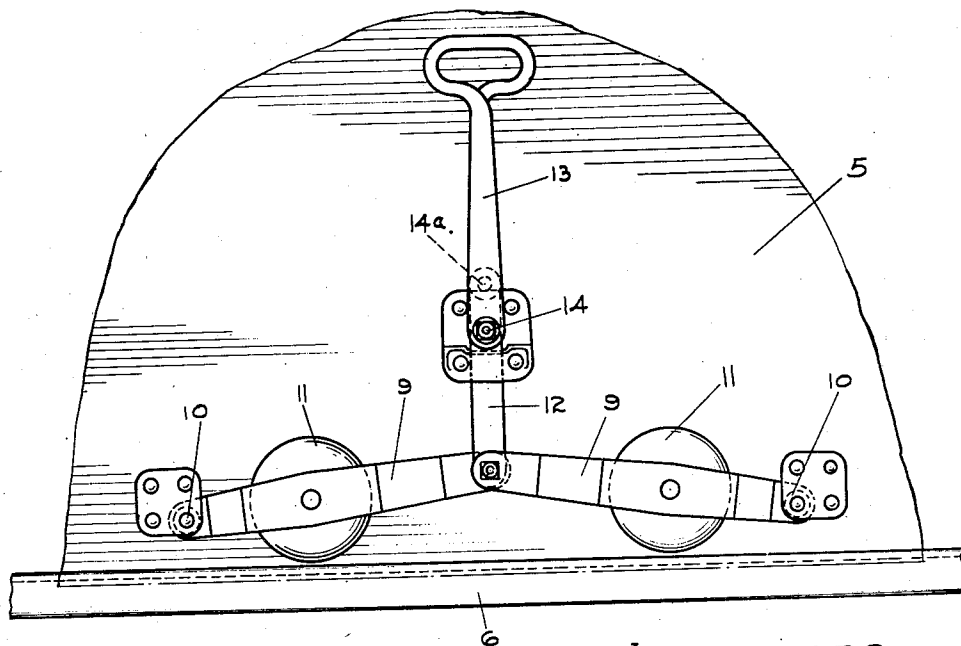


Fig-8



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FIG-9

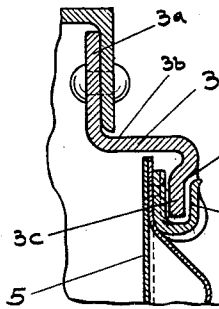


FIG-10

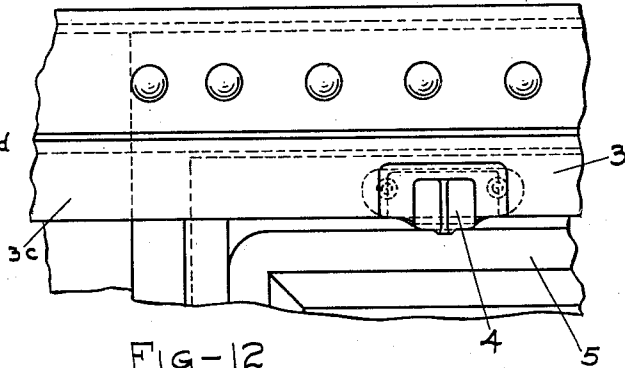


FIG-11

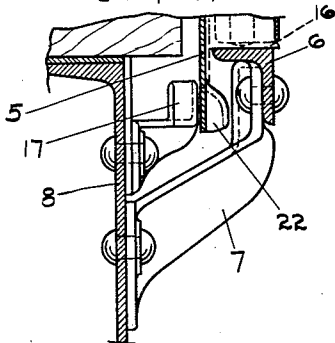


FIG-12

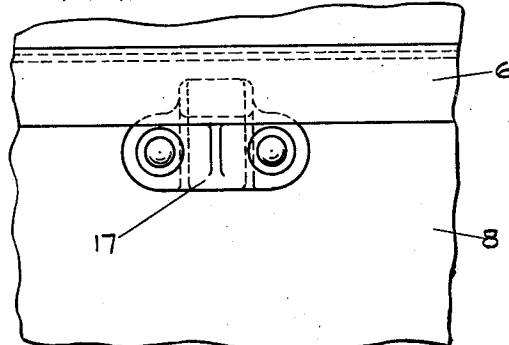


FIG-13

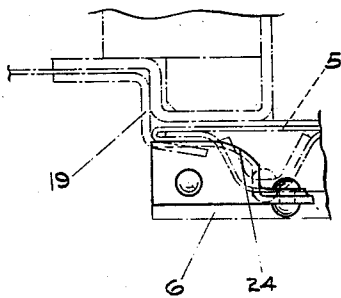
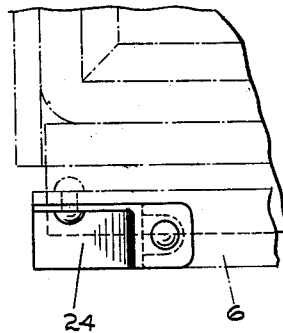


FIG-14



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UNITED STATES PATENT OFFICE

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CAR DOOR

Application filed January 3, 1927. Serial No. 158,519.

This invention relates to a metal side door for railroad cars, and concerns itself primarily with means for supporting the door.

elevational view of the door with parts removed illustrating the toggle lift mechanism with the door in elevated position.

Figure 8 is a view similar to Figure 7 illustrating the door in its lowered position. 55

Figure 9 is an enlarged fragmentary sectional view taken upon the line IX—IX of Figure 1.

Figure 10 is an enlarged fragmentary front elevational view of the structure shown in Figure 9. 60

Figure 11 is an enlarged fragmentary sectional view taken substantially upon the line XI—XI of Figure 1, illustrating the switching mechanism for the door. 65

Figure 12 is an enlarged fragmentary front elevational view of the structure shown in Figure 11.

Figure 13 is an enlarged fragmentary plan view taken at the front end of the door illustrating in detail the casting which is fastened to the track and serves to guide the door into closed position, the door and car part being indicated by dotted lines. 70

Figure 14 is an enlarged fragmentary front elevational view of the structure shown in Figure 13, the door and front guide being illustrated by dotted lines. 75

Figure 15 is an enlarged fragmentary sectional view upon the line XV—XV of Figure 1. 80

As shown on the drawings:

In order to explain and illustrate the application of this invention there is shown a portion of a railway car 1 having a doorway 2. Attached to the car adjacent the upper edge of the doorway there is a guide 3 adapted for receiving a guideway 4 upon a sliding door 5 which is adapted for closing the doorway. The guide 3 and guideway 4 are so constructed as to provide both sliding and vertical movement for the door and for moving the door inwardly at closing position. In the present instance the guide 3 is shown as comprising an angular member having one flange 3a attached to the car, a web 3b at right angles to the car, and a depending guide flange 3c, which cooperates with the guideways 4 on the door. This depending flange 3c is provided with a pair of indentures 3d 85
90
95
100

It is well known that railroad cars in transit are subjected to severe strains and the doors are subjected to severe usage. It frequently happens that great difficulty is encountered in opening and closing the doors on account of the deformation due to torsional strain or the like, which is imparted to the doors especially when they are supported upon rollers.

It is an object of this invention to overcome this defect in the provision of means whereby the door is only supported upon its rollers during its opening and closing movements, and wherein the door is adapted to be moved free of the side of the car during its sliding movements.

The invention comprises the novel structures and combination of parts hereinafter described, and more particularly pointed out and defined in the appended claim.

In the accompanying drawings which illustrate a preferred embodiment of this invention and in which similar reference numerals refer to similar parts in the different views:

On the drawings:

Figure 1 is a fragmentary side elevational view of a freight car, illustrating a sliding door embodying this invention.

Figure 2 is an enlarged broken sectional view taken substantially upon the line II—II of Figure 1, and looking in the direction of the arrow.

Figure 3 is an enlarged fragmentary sectional view taken substantially upon the line III—III of Figure 1.

Figure 4 is an enlarged fragmentary broken sectional view with parts removed taken substantially upon the line IV—IV of Figure 1.

Figure 5 is a view similar to Figure 4 illustrating the door in partially opened position.

Figure 6 is an enlarged fragmentary sectional view taken upon the line VI—VI of Figure 1.

Figure 7 is an enlarged fragmentary front

which cooperate with the guideways 4 which are shown as comprising a pair of U-shaped clips.

Adjacent the lower end of the doorway there is a horizontal track 6 which is shown as consisting of an angle bar having one flange attached to suitable brackets 7 extending from the stringers 8 and a horizontal flange which forms a track.

Adjacent the lower end of the door 5 are a pair of roller frames 9 which are pivoted to the door at their remote ends as indicated at 10. Each roller frame supports a roller 11 intermediate its ends. The inner or adjacent ends of the roller frame 9 are pivoted to a link 12, which in turn is pivoted at its upper end to a lever 13 which is pivoted at its lower end 14 to the door. With reference to Figure 3 it will be noted that the lever 13 is rigid with its pivot 14 which extends through a suitable casing 5a attached to the door, the inner end of the pivot being provided with an arm 14a to which the link 12 is pivoted. It will be noted that the connection of the link 12 with the arm 14a is located above the pivot point 14 of the lever. When this lever is moved into horizontal position as shown in Figure 7, the door will be elevated and will be supported by the rollers on the track. However, when the lever 13 is moved into vertical position as shown in Figure 8 the roller frames will be elevated or swung upwardly, disengaging the rollers from the track 6 whereby the door will be supported by its base angle 16 resting upon the track. It should be noted that the lever 13 is upon dead center when the rollers are elevated above the lower edge of the door.

When the door is operated, it is desirable to keep the same from scraping against the side of the car and for this purpose there is provided a switching member 17 shown in Figures 4, 5 and 11. It will be noted that this switching member has an outwardly curved surface 18 which is adapted to be engaged by the door when it is moved a short distance beyond its closed position as shown in Figure 5 for laterally moving the door outwardly from the side of the car.

At the front end of the door opening there is provided a weather strip 19 having an outwardly sloping flange beneath which the front edge of the door is adapted to engage when the door is in closed position, and upon the rear end of the door there is a deformed angular member 20 which is adapted to engage an angle member 21 secured to the rear post of the car, the door and car being provided with cooperating means 22 and 23 as shown in Figure 4, for drawing the door inwardly against the side of the car when the same is in closed position. The features set forth in this paragraph are already well known, and require no further description.

Upon the bottom of the track 6 adjacent the forward end thereof there is secured a casting 24 which is adapted to be engaged by the portion of the door which depends below the track when the door is moved to closed position for cooperating with such door for guiding the same into its closed position.

In order to close the door tightly, closing mechanism has been shown in Figure 1, which consists of a lever 25 pivoted intermediate its ends to the door and provided with a hook engaging end 26 adapted for engaging a hook 27 which is pivoted to the front edge of the door opening. Obviously, when the hook end of the lever is engaged with the hook 27 and the lever arm is moved to the left as viewed in Figure 1 the door will be moved toward the left. In this manner it is obvious that the door may be tightly closed.

In the operation of this door the lever 13 is swung into horizontal position as shown in Figure 7, for moving the rollers into contact with the track and elevating the door above said rollers. It will then be possible to move the door to and fro. When the door is opened, the guideway clips 4 will ride out of their indentures 3d and thus move the upper part of the door out of contact with the side of the car. At about the same time the door will engage the switching member 17 whereby the lower portion of the door will be moved outwardly and free of the side of the car. When the door is closed the indentures 3d and the parts 22, 23 and 24 will cause the door to move inwardly. Consequently there are upper and lower means for moving the door outwardly and upper and lower means or indentures for moving the door inwardly. If at any time it is desirable to support the door directly on the tracks as for example when it is in closed position the lever 13 may be swung into vertical position as shown in Figure 8 for elevating the rollers above the lower edge of the door whereby the lower edge of the door may rest directly upon the track.

We are aware that many changes may be made and numerous details of construction may be varied through a wide range without departing from the principles of this invention and we, therefore, do not purpose limiting the patent granted hereon, otherwise than necessitated by the prior art.

We claim as our invention:

Door lift mechanism for a door provided with a pressed out portion extending forwardly of said door and forming a casing, a pair of roller frames pivoted to said door adjacent the lower edge thereof within said casing, rollers journaled in said frames, a link pivotally connecting the inner ends of said frames, said roller frames and link lying within said casing, an operating lever

on the outside of said casing, a pivot rigid with said lever and pivotally connected to said casing, said pivot being provided with an arm lying within said casing and pivotally connected to said link.

5 In testimony whereof, we have hereunto subscribed our names.

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