Oct. 19, 1943. W. E. BIKLE 2,331,957

RAILWAY CAR SIDE DOOR

Filed Jan. 21, 1941 2 Sheets-Sheet 1

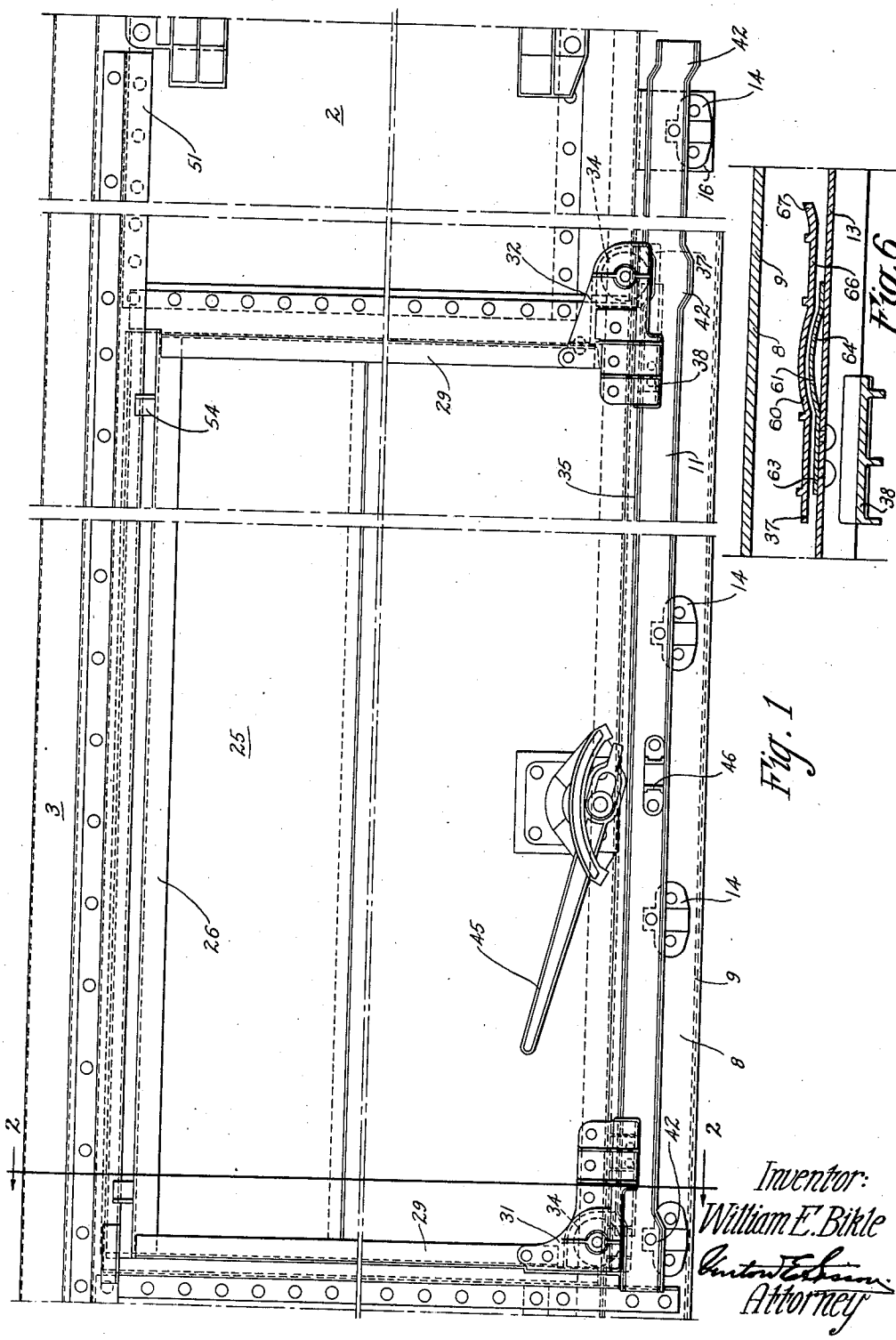


Fig. 1

Fig. 6

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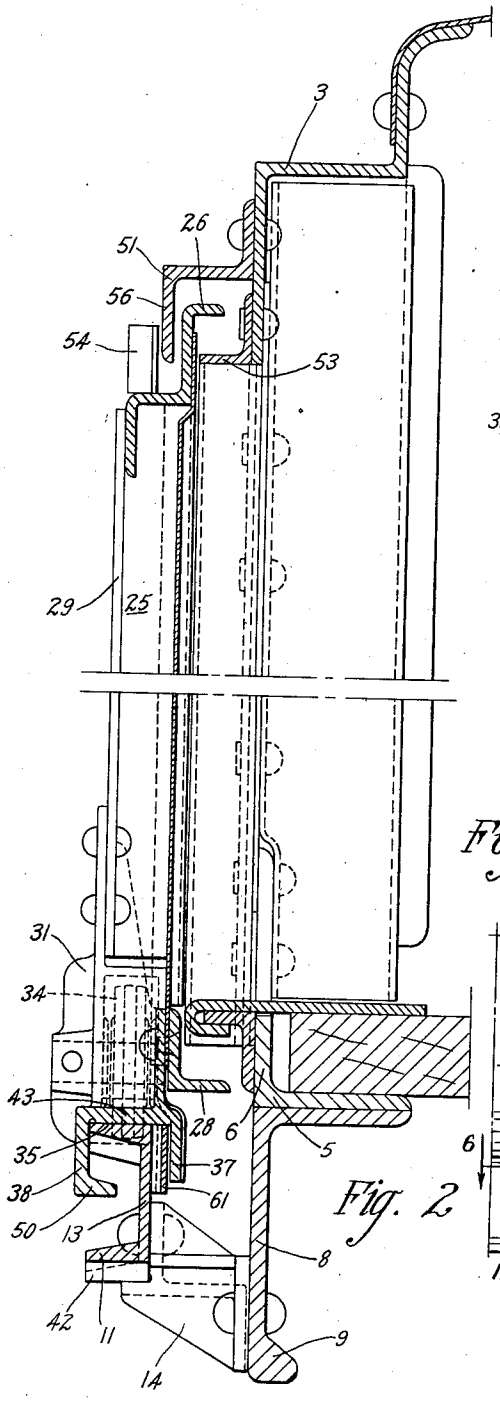


Fig. 2

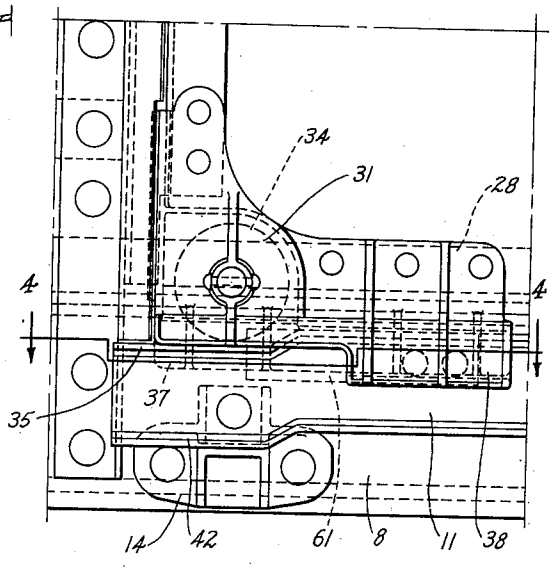


Fig. 3

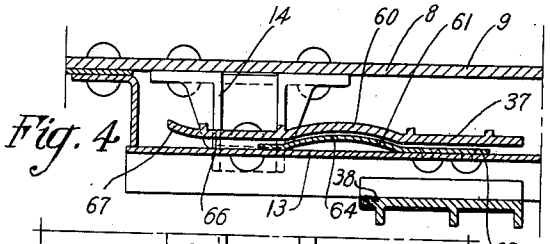


Fig. 4

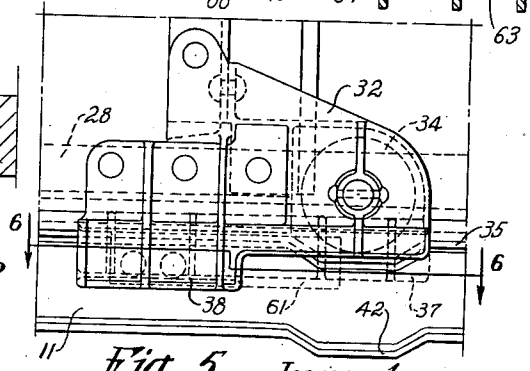


Fig. 5

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2,331,957

RAILWAY CAR SIDE DOOR

William E. Bikle, Chicago, Ill., assignor to Standard Railway Devices Company, a corporation of Delaware

Application January 21, 1941, Serial No. 375,212

3 Claims. (Cl. 20—22)

The invention relates to side doors for railway cars and specifically to the fixtures or operating mechanism for such doors, which doors are commonly arranged to slide in planes substantially parallel with the side walls of the car. The travel of such doors is approximately equal to the width of the door opening so that the doors may be moved into alignment with the opening or entirely out of alignment with such opening. The invention relates particularly to the type of side door fixtures manufactured and sold by my assignee, and disclosed and claimed in Gilpin Patent No. 1,902,772 of March 21, 1933.

Such a side door is commonly arranged with rollers pivotally mounted upon the door and preferably enclosed in housings so that a small part of each roller extends below its respective housing. A horizontally extending track is secured to a side wall of the car, preferably adjacent the lower edge of the door opening, and is provided with depressions. The depressions are somewhat deeper than the distance by which the rollers extend below the roller housings so that when the door is moved to a position wherein the rollers are above the depressions, contact between the rollers and the truck is relieved and the door is supported by parts of the roller housings or other members secured to the door resting upon the track or other fixed part or parts of the car. The friction between the members secured to the door and parts secured to the car is sufficient to prevent easy moving of the door. The depressions in the track are positioned so that this frictional resistance to moving is effective when the door is in the full open or full closed position and so that the rollers roll upon the track when the door is in any position between full open and full closed.

Railroad regulations require that before a car is moved the door thereof should be absolutely locked so as to prevent sliding of the door during service movements of the car. This regulation is not universally complied with and railroad operators often rely upon the above mentioned frictional resistance to prevent movement of the door. This frictional resistance has proved to be insufficient in certain cases; injuries to operators, as well as damages to the car and the door, have resulted as a consequence.

An object of the invention is to increase the frictional resistance of the door to moving when such door is in the full open or full closed position. This added frictional resistance, in effect, supplements that which is due to the weight of the door.

Another object of the invention is to move the door inwardly of the car and closer to the door opening as the door is moved into fully closed position. Such movement more effectively seals the door opening so as to prevent the entrance of moisture and other foreign matter, as well as cold air, into the car.

Another object is to reduce the tendency of doors to jump off the track. A railway car is subject to violent shocks during service and the door consequently has a tendency to bounce up and down during such shocks. The hood arrangement at the top of the door commonly restricts the upward movement of the door so as to prevent jumping off the track, but such hoods have been known to become displaced somewhat, thereby increasing the danger of losing the door. I have incorporated means associated with the track and rollers to reduce the danger of losing the door by an upward movement thereof.

Other objects and advantages of my invention will be apparent from the following detailed description by referring to the accompanying drawings.

In the drawings:

Fig. 1 is a side elevation of a portion of a railway box car showing a side door incorporating my invention.

Fig. 2 is an enlarged section on line 2—2 of Fig. 1.

Fig. 3 is similar to a part of Fig. 1 showing the left roller housing to an enlarged scale.

Fig. 4 is a section on line 4—4 of Fig. 3.

Fig. 5 is similar to a portion of Fig. 1 showing the right roller housing to a larger scale.

Fig. 6 is a section on line 6—6 of Fig. 5.

In the railway box car shown in Figs. 1 and 2, the upper chord of the side wall 2 is formed by the side plate 3 and the lower chord is formed by the angle shaped side sill 5. A portion of the upstanding leg 6 of the side sill 5 is cut away at the doorway in order to provide access to the interior of the car. A bulb angle 8 having the bulbed leg 9 depending is secured to the bottom of the side sill 5 and extends along that portion of the side sill 5 having the upstanding leg 6 partly cut away; that is, the bulb angle 8 reinforces the side sill 5 at the doorway. The track upon which the door moves comprises an outwardly facing and horizontally extending channel member 11 disposed with its web 13 substantially vertical. The channel track 11 is supported by spaced apart brackets 14 extending between and secured to the bulb angle 8 and to the track 11. The end of the track 11 remote from the

doorway is supported by an angle clip 16 depending from the side sill 5 and to which the track 11 is attached by a bracket 14 similar to those heretofore described.

The side door 25 of the car has for its upper frame member a W-section strip 26 and for its lower frame member an angle strip 28. Vertical frame members 29 extend between and are secured to the upper (26) and lower (28) frame members. A roller housing 31, 32 is disposed at each lower corner of the door and arranged to function also as a gusset to connect and reinforce the adjacent ends of the vertical and horizontal frame members 29, 28 at the corners of the door. Each of said housings 31, 32 has a roller 34 pivotally mounted therein and projecting a small distance therebelow so as to engage the upper flange 35 of the channel track member 11. Each roller housing 31, 32 preferably has a part 37 depending on the inside of the track 11 and another part 38 depending on the outside of the track 11; such parts 37, 38 spaced apart a distance somewhat greater than the width of the upper flange 35 of the channel track 11 so as to provide a guide for the door during its rolling movement upon the track.

The track 11 is depressed at certain positions (42) which are positioned so that when the door 25 is in the full open or full closed position, the rollers 34 are disposed above the depressions 42 in the track 11. Each roller housing 31, 32 has a pad 43 disposed immediately above the track 11 and the depressions 42 in the track are deeper than the distance by which the rollers 34 extend below the roller housings 31, 32 so that when the rollers 34 are above the depressions 42, the pads 43 rest upon the upper flange 35 of the track 11. The weight of the door 25 is thus supported on the pads 43 and the sliding friction between such pads 35 and the track 11 is sufficient to prevent easy movement of the door when such door is in full open or full closed positions. When the door 25 is in any position between the full open and full closed position, the rollers 34 roll upon the undepressed parts of the track 11 and the door is easily movable from one position to another. A starting handle 45 is pivotally mounted upon the door 25 and brackets 46 are mounted upon the track 11 so that the large leverage provided by such handle 45 may be used when the door is in the full open or full closed position to slide the pads 43 over the track 11 until the rollers 34 come into operation on the undepressed part of the track, thereby permitting easy rolling of the door 25.

As shown in Fig. 2, the outer depending part 38 of the roller housing 31 and/or 32 has a leg 50 projecting into the channel and underlying the upper flange 35 of the channel track 11 so as to prevent excessive upward movement of the door 25 and consequent jumping off the track if the interlocking arrangement of hood 51, top door strip 26 and sealing strip 53 should prove ineffective. The upstanding finger 54 on the door 25 cooperates with the depending leg 56 of the hood 51 to guide the door.

The inner depending part 37 of the roller housing 31 and/or 32 has a recess 60 facing toward the web 13 of the channel track 11 as shown most clearly in Figs. 4 and 6. Both housings 31, 32 are preferably provided with recesses 60. A cantilever spring 61 is secured at one end 63 thereof to the track 11 and has its other or free end 64 formed convexly outward from the web 13. When the rollers 34 are disposed over the depressions 42, the convex parts 64 of the springs 61 project into the recesses 60 and any movement of the door 25 requires that the springs 61 be compressed in order to clear between the track 11 and the unrecessed portions 66 of the inner depending parts 37 of the roller housings 31, 32. The leading edges of the inner depending parts 37 are preferably flared (67) away from the web 13 of the channel track 11 so as to permit the roller housings 31, 32 to slide past the springs 61, thereby permitting the convex parts 64 of the springs 61 to seat themselves within the recesses 60. The force required to compress the springs adds to the frictional resistance of the door 25 to sliding, as hereinabove pointed out, and reduces the danger of accidental movement of the door.

As shown in Fig. 2, the inner (37) and outer (38) depending parts of the roller housings 31, 32 are spaced apart a sufficient distance to provide adequate clearance between the parts 37, 38 and the track 11 so that the door moves freely inwardly and outwardly a relatively small distance during rolling upon the track. The springs 61 function to move the door 25 inwardly toward the car as the door approaches the full closed position and thereby provides a more effective seal between the car and the door to prevent entrance of foreign matter into the car.

As hereinabove pointed out, there is a tendency at times for the door 25 to jump off the track during service movements of the car. The force exerted between the springs 61 and the inner depending parts 37 of the roller housings 31, 32 adds a frictional resistance which tends to prevent upward movement of the door.

The accompanying drawings illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof, within the scope of the claims, will occur to persons skilled in the art.

I claim:

1. In a railway car having a wall with a doorway therein and a door having rollers revolubly mounted upon the lower edge thereof and arranged to roll upon a horizontally extending track in a plane parallel with said wall, and means to transfer the weight of the door from the rollers to rigid parts of the door in a predetermined position of the door thereby frictionally resisting movement of the door, the combination therewith of resilient means carried by a fixed part of the car and adapted to be laterally compressed by said door as it moves to said predetermined position to further resist longitudinal movement of said door.

2. In a railway car having a wall with a doorway therein and a door having rollers revolubly mounted upon the lower edge thereof and arranged to roll upon a horizontally extending track having depressions therein adapted to receive said rollers and transfer the weight of the door from the rollers to rigid parts of the door in predetermined positions of the door, the combination therewith of resilient means carried by a fixed part of the car and adapted to be laterally compressed by said door as said rollers move into said depressions to further resist longitudinal movement of said door.

3. In a railway car having a wall with a doorway therein and a door having rollers revolubly mounted upon the lower edge thereof and arranged to roll upon a horizontally extending

track in a plane parallel with said wall, and means to transfer the weight of the door from the rollers to rigid parts of the door in a predetermined position of the door thereby frictionally resisting movement of the door, the combination therewith of resilient means carried by a fixed part of the car and adapted to be laterally compressed by said door as it moves to said predetermined position to press said door against said wall and thereby provide a more effective seal between the car, wall and door and to further resist longitudinal movement of said door.

WILLIAM E. BIKLE.