

Jan. 25, 1938.

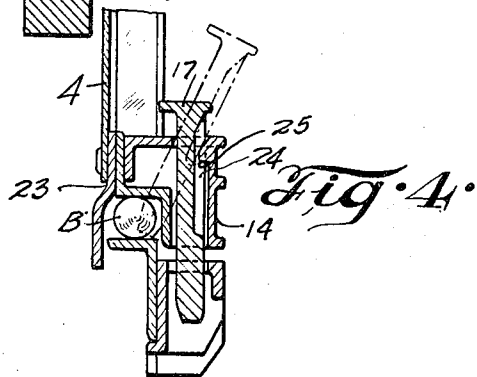
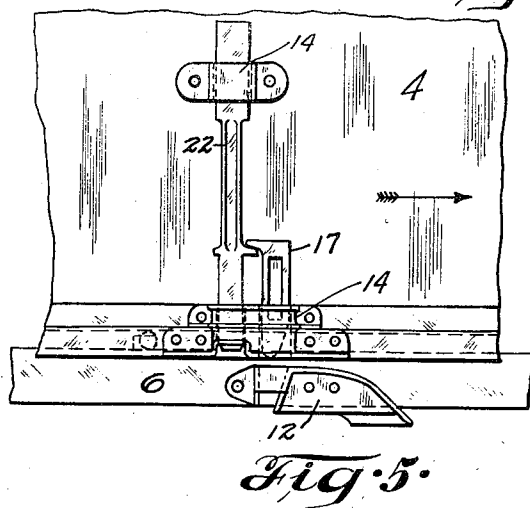
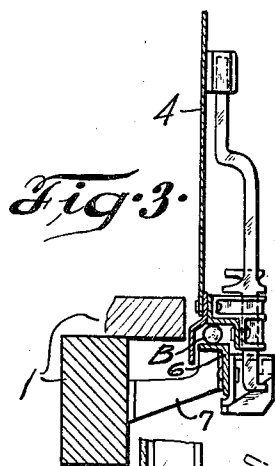
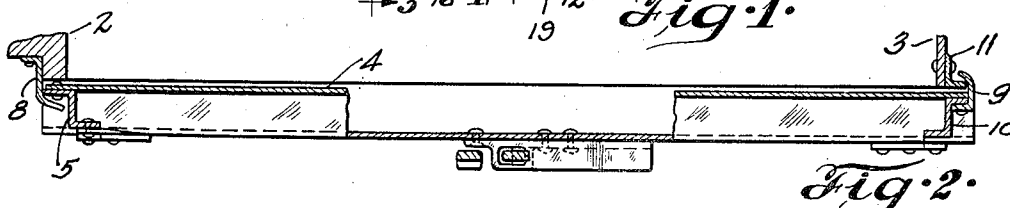
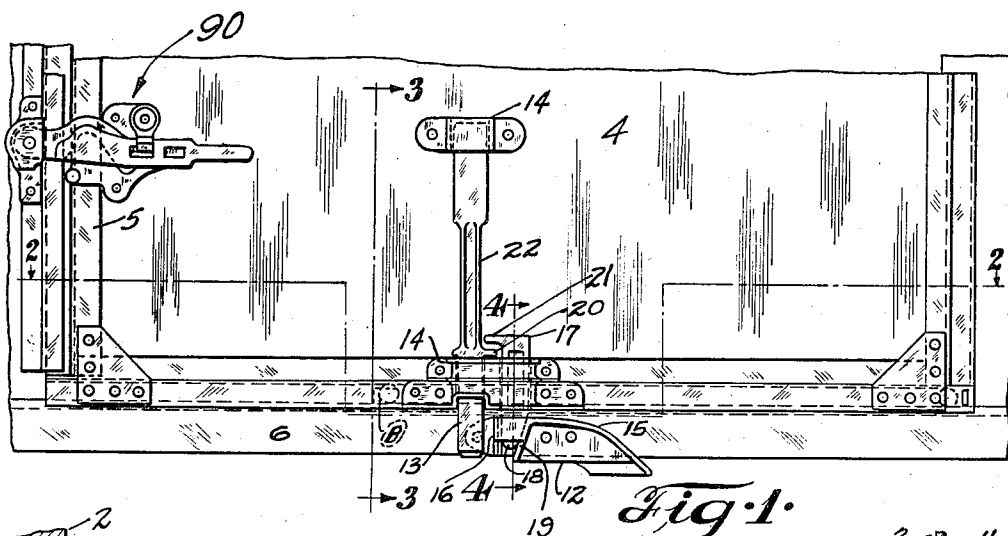
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2,106,166

RAILWAY CAR DOOR STRUCTURE

Filed May 2, 1934

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

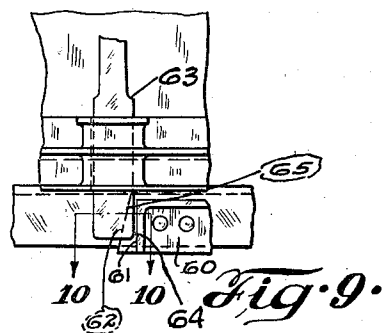
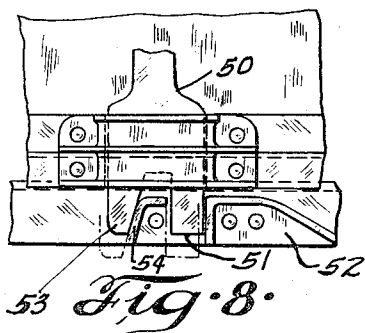
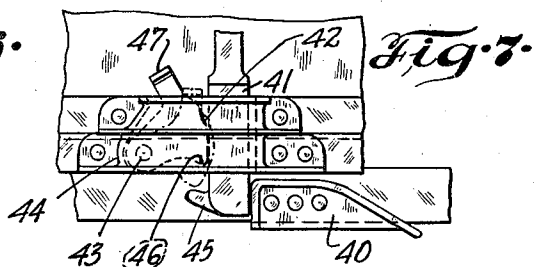
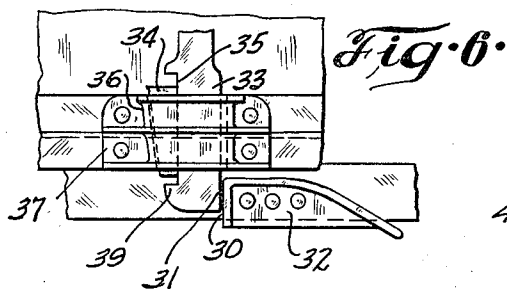
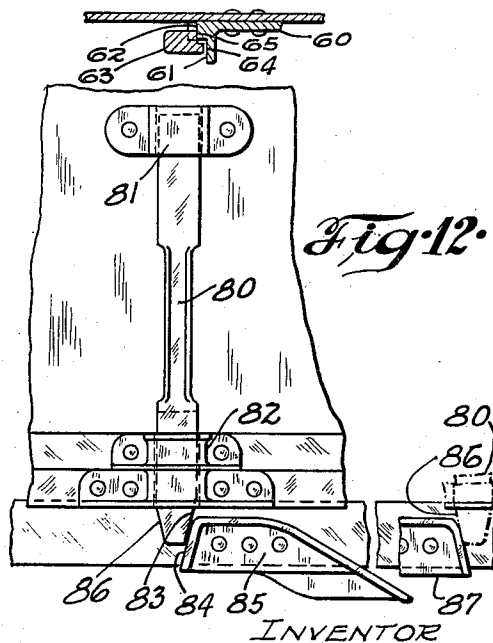
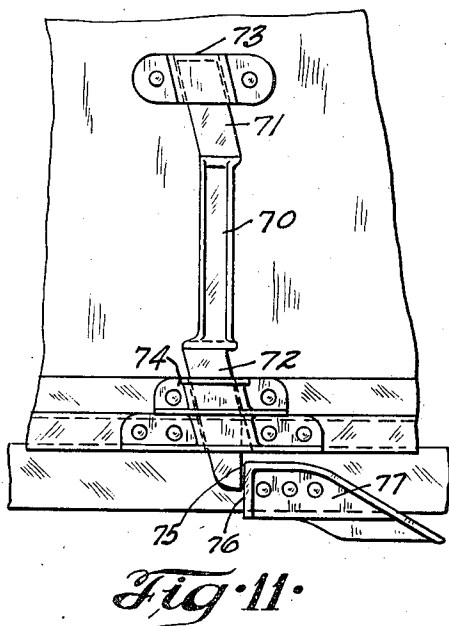
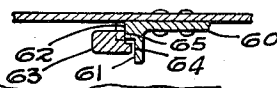


Fig. 10.



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UNITED STATES PATENT OFFICE

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RAILWAY CAR DOOR STRUCTURE

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Application May 2, 1934, Serial No. 723,438

4 Claims. (Cl. 292—184)

The invention relates to sliding door construction particularly adapted for railway rolling stock house cars and the invention consists in door holding mechanism and the combination of door and associated structure therewith.

More particularly the invention consists in a device for taking up slack in a door holding mechanism whereby undesirable play between the door and a stop therefor on the car body, or between the door and the door post, is eliminated.

The main object of the invention is to provide an automatic take-up for preventing such play.

Other detail objects will appear from the description of the devices used to attain this general object.

In the accompanying drawings illustrating the invention—

Figure 1 is an elevation of the lower portion of a railway box car side door of the sliding type, the adjacent part of the car body and the door holding and locking mechanism being illustrated also.

Figure 2 is a horizontal section taken on the line 2—2 of Figure 1.

Figures 3 and 4 are vertical transverse sections on the corresponding section lines of Figure 1.

Figure 5 is a detail of the holding mechanism shown in Figure 4 but illustrating the same in a different position.

Figures 6, 7, 8, 9, 11 and 12 are elevations of modified forms of the door holding mechanism. Figure 10 is a horizontal section taken on the line 10—10 of Figure 9.

The car body structure is indicated by the car sill and floor 1 and the door posts 2 and 3. The car door 4 is supported by anti-friction elements B carried by a track 6 mounted on the car sills 1 by means of brackets 7.

When the door is in closed position, its front edging 5 contacts with a weather strip 8 on door post 2 and a weather strip element 9 on the door rear edging 10 cooperates with a weather strip element 11 on door post 3 to seal the door opening against dirt, rain, sparks, etc.

A stop member 12 is secured to track 6 and hence may be considered rigid with the car body. A latch member 13 is slidably mounted upon the door by means of brackets 14 and is positioned in the same general longitudinal vertical plane as stop 12 and just above the same whereby as the door is moved from right to left to the position shown in Figure 1 the lower end of latch member 13 rides over the inclined part of the top face 15 of stop 12 and upon reaching the end of the latter, drops down in front of the depending vertical face 16 of the stop into the position shown in Figure 1 in which the stop and latch present opposing faces to each other. Any retrograde

movement of the door will be checked by engagement of latch member 13 and stop face 16.

A key 17 is slidably mounted in lower bracket 14 alongside of latch member 13 and has a tapered lower element 18 disposed to engage an inclined element 19 on stop 12 to form a wedge-like structure. A lug 20 on latch 13 extends under a lip 21 on the upper end of key 17 and normally lug 20 and lip 21 are spaced substantially from each other. When latch member 13 is manually lifted by its handle portion 22, lug 20 strikes lip 21, loosening the wedging elements. Further upward movement of latch member 13 clears its lower end and the lower end of key 17 from stop 12 (see Figure 5) so that the door may be moved to open position.

Stop 12 and the cooperating parts of the holding mechanism mounted on the door are so associated that elements 13 and 16 will clear each other freely to permit elements 5 and 9 to contact with elements 8 and 11, respectively, to seal the door opening. Any play arising out of wear of the holding mechanism parts or of the interengaging elements of the door and its posts, or arising out of minor misadjustment of any of these parts, will be compensated for by the automatic take-up provided by key 17 and the inclined elements of stop 12.

Figure 4 illustrates the manner in which key 17 may be assembled with bracket 14 to avoid loss of the key. Before bracket 14 is bolted or riveted to the door lower edging 23, key 17 may be inserted at the angle indicated by the dot and dash lines in Figure 4. When the key is moved to upright position, as shown in full lines, and the bracket is secured to edging 23, the groove 24 in key 17 will receive the lug 25 on the bracket and permit the key to slide up and down but the lug 25 will engage the lower end of groove 24 so as to limit the upward movement of the pin and its withdrawal from the bracket.

A stop similar to stop 12, but facing in the opposite direction, may be placed adjacent to the position of latch member 13 when the door is in wide open position to engage the latch member 13 and prevent the door from sliding back and forth on its track. Slight shifting movement of the door in its open position is unimportant and ordinarily no automatic take-up or wedging structure would be provided. However, if such take-up were considered important, the key arrangement could be duplicated on the other side of the latch.

Figure 6 illustrates a modified structure in which the interengaging elements 30 and 31 of the fixed stop 32 and the sliding latch member 33, respectively, are disposed vertically so as to positively oppose each other, and the automatic take-up or wedge structure includes a tapered key 34 inserted between the face 35 of

latch member 33 and the inclined side 36 of bracket 37. Key 34 tends to force latch member 33 to the right in the common opening in the bracket, thereby maintaining the opposing elements of the latch member 33 and stop in contact and thrusting the door 38 to the left. Lug 39 on the lower end of latch member 33 will engage the lower end of key 34 when the latch member 33 is raised to lift the key.

In the construction shown in Figure 7, the stop 40 and the latch member 41 correspond to the stop 32 and latch 33 of Figure 6. The wedging action is provided by a cam 42 pivoted at 43 on the door bracket 44 with the cam surface shaped to force latch member 41 to the right as gravity pulls the cam downwardly. A lug 45 on the lower end of latch member 41 will strike an opposing projection 46 on the cam to lift the latter when the latch is raised. A lip 47 on the upper end of the cam may be engaged by a hammer or lever to release the cam.

The structure of Figure 8 embodies a modification in which the latch member 50 has one depending leg 51 with a vertical rear face arranged to oppose the vertical front face of the stop 52. The latch member 50 has another depending leg 53 with an inclined rear face arranged to oppose the inclined front face 54 of the stop. With the latch member 50 as shown in full lines, the load will be on both the straight and tapered elements of the latch member 50 and stop. If the handle is slightly raised, the load will be on the vertical elements only. After the handle is lowered by gravity, the load will be on the tapered elements, forcing the door forwardly to tightly engage its sealing elements.

Figures 9 and 10 illustrate an arrangement having a different appearance but substantially the same elements in that the stop 60 has a vertical forward face 61 and an inclined forward face 62 nearer the side of the car. The latch member 63 is similarly provided with a vertical rear face 64 and an inclined rear face 65.

In Figure 11 the latch comprises a vertically disposed handle 70 and inclined ends 71 and 72 slidably mounted in brackets 73 and 74, respectively, whereby the upward and downward movement of the latch bolt results in forward and rear movement also. The interengaging faces 75 on the latch and 76 on the stop 77 are disposed vertically.

In Figure 12 the latch member 80 is substantially vertical from end to end and slides vertically in brackets 81 and 82 and has an inclined face 83 for engaging a correspondingly inclined face 84 on the stop 85. If desired, the latch member 80 may be provided with a face 86 inclined in the opposite direction from face 83 and disposed to provide wedge-like engagement with another stop 87 positioned to cooperate with the latch member 80 at the end of the opening movement of the door.

In all of the constructions shown, the latch bolt will ride automatically over the stop as the door is moved to closed (or other desired) position and the wedge elements will operate automatically to hold the door in extreme position irrespective of misadjustment or wear of the parts.

In all of the constructions shown, it is preferred that the door and the adjacent door post will be provided with weather-strip elements, as indicated in Figure 2, for sealing the door opening when the door is closed. Preferably the door and one of its posts are provided with other

holding and locking devices such as indicated generally at 90 (Figure 1), but the holding mechanism described in detail above will function independently of such locking mechanisms to attain the objects set forth in the introductory portion of the specification. Variations other than those described may be made without departing from the spirit of the invention and the exclusive use of such modifications as come within the scope of the claims is contemplated.

I claim:

1. In combination, a stop member for attachment to a wall with a door opening, said member having a vertically disposed element and an element inclined to the vertical, both of said elements facing in the same general direction, latch bolt structure arranged for vertical sliding movement on the door, said latch bolt structure having a vertical face on its lower portion and also having an inclined face on said lower portion and said latch structure being positioned when said door is closed so that said vertical face opposes the vertical element of said stop member and said inclined face opposes the inclined element of said stop member.

2. A door latch for sliding door comprising a member movable vertically to and from a position to cooperate with a stop on the wall on which said door is mounted to hold said door in one location, said member being arranged to have wedging engagement with the stop in said position so as to yieldingly resist withdrawal of said member, and a separate handle arranged for mounting on the door for withdrawing said member from said engagement, there being substantial lost motion between said handle and member when operatively associated to provide for a striking blow by said handle on said member to disengage said member from said stop.

3. In a device of the class described, brackets for attachment to a door, a handle member arranged for sliding movement in said brackets to raised and lowered positions, a stop member for attachment to the wall upon which the door is mounted, a stop engaging member for sliding movement on the door independently of said handle, said latter mentioned member having an element overlying a part of said handle member and normally spaced therefrom when the door is in closed position and said stop is engaged by said stop engaging member, said handle member in moving upwardly from its lowered position being arranged to strike a blow against said element to forcibly dislodge the same from its engagement with said stop member.

4. In a device of the class described, a handle member, brackets for attachment to a door and having opposed faces for slidably guiding said handle member in a restricted path from upper to lower positions, a stop member arranged for attachment to the wall upon which the door is mounted, a stop engaging member arranged for wedging contact with said stop member, and means for mounting the same upon the door so that it may move both vertically relative to said handle member and horizontally towards and from said handle member, there being opposing faces on said stop engaging member and said handle member normally spaced apart whereby said handle member may strike a blow against said stop engaging member to forcibly move the same out of its engagement with said stop member.

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