

March 30, 1937.

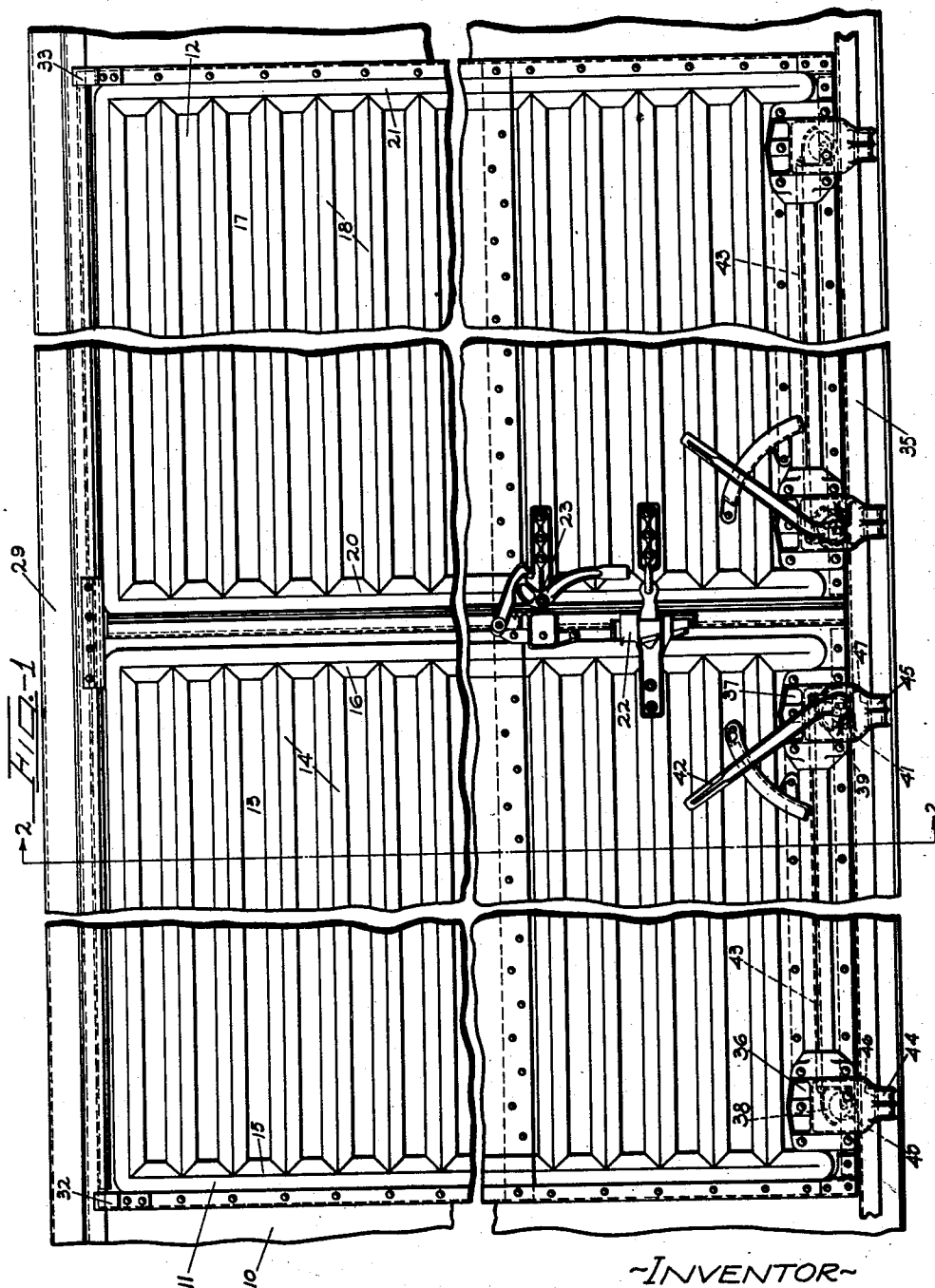
K. J. TOBIN

2,075,558

CAR DOOR

Filed Dec. 28, 1933

3 Sheets-Sheet 1



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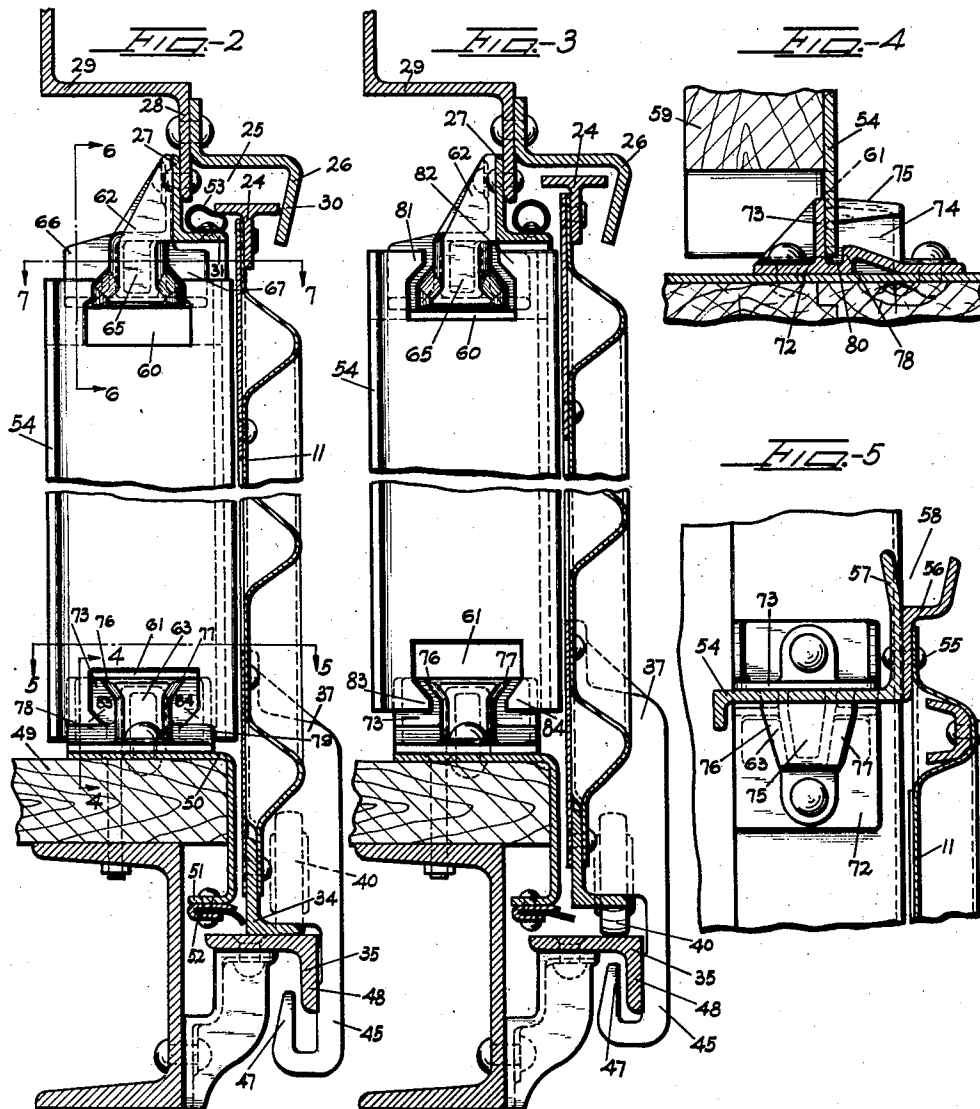
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3 Sheets-Sheet 2



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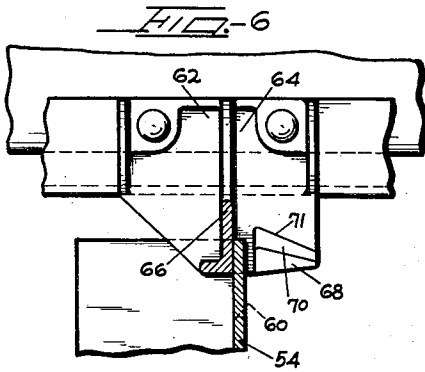
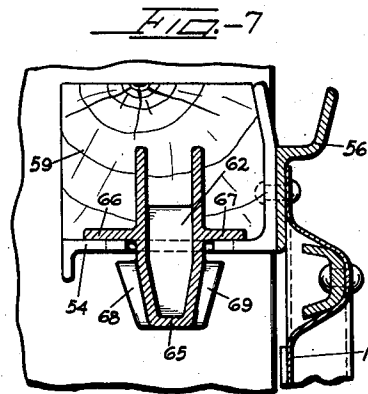
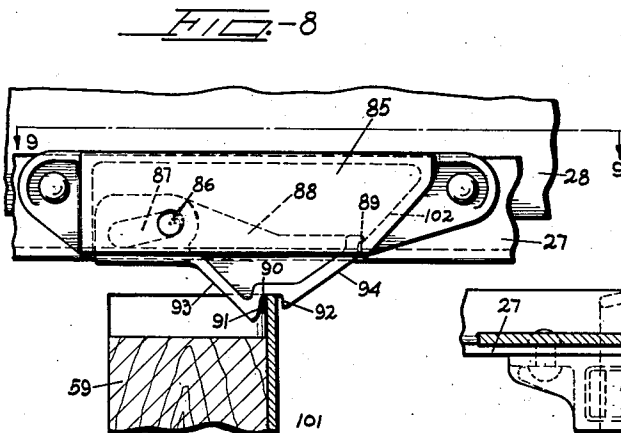
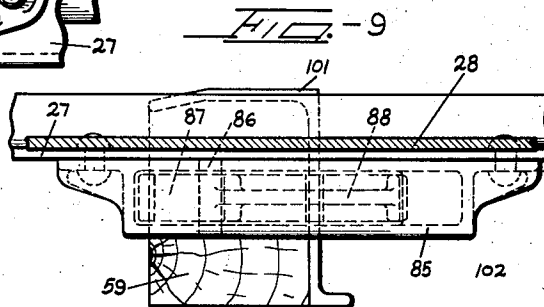
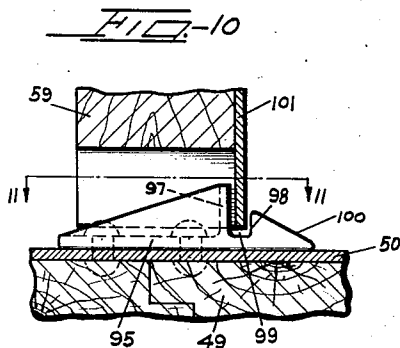
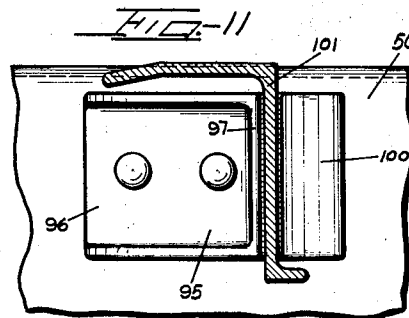
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,075,558

CAR DOOR

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7 Claims. (Cl. 20—22)

This invention relates to car doors and is directed primarily to that type of car door known as a lift door and to the means for securing said door in closed position.

5 The instant invention is particularly applicable to the double door construction customarily employed upon railway house cars utilized for the transportation of automobiles, furniture and other kinds of bulky commodities. The invention is singularly pertinent to the door of such double door construction denominated the auxiliary door. The auxiliary door is ordinarily a sliding door and usually carries a post upon its front vertical margin, the post being ordinarily movable vertically with the door. In this situation rigid latching means in the form of castings have heretofore been provided at the top and bottom of the post for cooperation with rigid latching means carried by the car above and below the post, in order to secure said auxiliary door in closed position. These post castings add to the weight of the door, increase the cost thereof and, because imperfections developed in the forming of said castings, they have been unsuitable in some instances to withstand the rigorous conditions to which they are subjected.

It becomes an object of this invention, consequently, to maintain the latching function of the movable post provided on sliding auxiliary doors of the lift type while simplifying the construction of said post and to introduce economy in weight and cost of construction.

A further object is to provide a sliding auxiliary door of the lift type having a movable post secured to the forward margin thereof, the post being fabricated for cooperation with latch members secured to the car above and below the post to lock the door in closed position, whereby the latch castings formerly utilized upon the post for this purpose may be eliminated.

A further object is to provide a sliding auxiliary door of the lift type carrying a movable post upon its forward margin which cooperates with latch members secured to the car above and below the post, the latch members being of such construction that the post may cooperate therewith to lock the door in closed position while dispensing with post latch castings and fabrication of the post.

Other objects of the invention will become clear as the description thereof proceeds.

In the drawings forming part of this specification

55 Figure 1 is a front elevation with parts broken

away of a railway house car, showing a double door construction embodying the invention;

Figure 2 is a vertical section taken on line 2—2 of Figure 1, the door being illustrated in its lowered position;

Figure 3 is a view similar to Figure 2, the door being illustrated in its elevated position;

Figure 4 is a vertical section taken on line 4—4 of Figure 2;

Figure 5 is a horizontal section taken on line 5—5 of Figure 2;

Figure 6 is a vertical section taken on line 6—6 of Figure 2;

Figure 7 is a horizontal section taken on line 7—7 of Figure 2;

Figure 8 is a view similar to Figure 6, showing a modified form of the invention;

Figure 9 is a horizontal section taken on line 9—9 of Figure 8;

Figure 10 is a view similar to Figure 4, showing a modified form of the invention; and

Figure 11 is a horizontal section taken on line 11—11 of Figure 10.

Referring to the drawings and, particularly, Figures 1 to 7, inclusive, thereof the numeral 10 designates a portion of the side wall of a railway house car embodying a double door construction, the auxiliary door of which is indicated at 11 while the main door thereof is indicated at 12. The auxiliary door comprises, preferably, a metallic panel 13 formed with a plurality of horizontally extending corrugations 14 merging at their ends with vertical corrugations 15 and 16 formed adjacent the vertical edges of the panel. The main door 12 similarly comprises a metallic panel 17 provided with a plurality of spaced horizontal corrugations 18 merging at their ends with vertical corrugations 20 and 21 formed in the metallic panel adjacent the vertical edges thereof. These doors are illustrated in their closed position in Figure 1 of the drawings and in said position may be fastened together by means of latching mechanism designated generally by the reference numeral 22. An opening and starting mechanism, indicated as a whole by the numeral 23, may be utilized upon the doors. The upper horizontal margin of each of the doors is provided with a T-shaped reinforcing member 24, which is adapted to be received within a guideway 25 formed by means of a retaining hood 26 and a header 27, both of which are secured to the depending leg 28 of a side plate 29. The retaining hood 26, as clearly illustrated in Figure 2 of the drawings, is substantially Z-shaped in section, the depending flange 30 of which is

preferably directed inwardly toward the car for a purpose which will hereinafter appear. The header member 27 is illustrated as being in the form of an angle member and embodies an outwardly extending horizontal flange 31. Brackets 32 and 33, secured, respectively, to the rear vertical margins of the main and auxiliary doors, are utilized as a further aid in guiding the door in its travel.

As clearly illustrated in the drawings each door is of the type known as a lift door whereby in its lowered position, as illustrated in Figure 2, the horizontally extending reinforcing member 34, secured to the lower margin of the door, may have frictional engagement with a supporting track 35 in order to prevent or retard movement of the door upon the track when the car is subjected to impact. When it is desired to move the door between open and closed positions thereof mechanism, such as that illustrated particularly in Figure 1 of the drawings, may be utilized. This mechanism, which is substantially the same for each of the doors, comprises briefly bracket members 36 and 37 secured to the door and within which roller housings 38 and 39 are journaled in eccentric relation to the mounting for rotatably securing rollers 40 and 41 in said housings in engagement upon the track 35. A lever 42, secured to one of the roller housings, is provided for imparting movement to said housing for elevating the door, this movement being in turn imparted to the other roller housing by means of a connecting or actuating bar 43. The bracket 36 is provided with a depending flange 44 while the bracket 37 has a corresponding flange 45. The bracket 36 carries, additionally, an upwardly extending flange 46 disposed inwardly and in spaced relation to the flange 44, while the bracket 37 carries an upwardly extending flange 47 disposed inwardly and in spaced relation to the flange 45. The depending leg 48 of the supporting track 35 is received between the flanges provided on the brackets 36 and 37 in order to retain the lower portion of the door against disengagement from the track.

The upper portion of the door opening covered by means of the main and auxiliary doors is defined by the header 27. The lower portion of said opening is defined by the floor 49 of the car. A threshold plate 50 overlies the floor within the door opening and is extended downwardly therefrom and provided with an intumed flange 51 to which a sealing strip, indicated generally at 52, is secured. A sealing strip 53 is secured to the horizontally extending flange 31 of the header 27, said sealing strips being so disposed relative to the doors that in the closed positions of said doors, as shown in Figure 1 of the drawings, the T-shaped reinforcing member secured to the upper margin of the door will engage the sealing strip 53 and the reinforcing member 34 secured to the lower margin of the door will engage the sealing strip 52. By this arrangement cinders, dust and other foreign matter will be prevented from entering the car above and below the door.

It will be readily apparent from Figures 2 and 3 of the drawings that the T-shaped reinforcing member 24 secured to the upper margin of the door functions, additionally, by virtue of its coaction with the depending inwardly directed flange 30 of the retaining hood 26 to force the upper margin of the door inwardly toward the car in the lowering movement of said door.

It is customary, in the double door construc-

tion of the type illustrated, to utilize a post secured to and movable with the auxiliary door in the opening and closing movements of said door. Such a post, indicated at 54, preferably Z-shaped in section as illustrated in Figure 5 of the drawings, is secured as by means of rivets 55 to the forward margin of the auxiliary door 11. The rivets 55 serve, additionally, to fasten an angle stop member 56 to said margin of the door and to the post 54, said stop member coacting with the deformed flange 57 of the post to provide a recess 58 in which the forward margin of the main door 12 is received in the closed position of the main and auxiliary doors. A wood filler 59, serving as a nailing strip, is customarily utilized with the post.

The post 54, in addition to its function of reinforcing the front margin of the auxiliary door 11, is employed for fastening the auxiliary door against both longitudinal and lateral movements when said door is in its closed position. To this end the upper and lower margins of the post are provided with recesses 60 and 61. Latch members 62 and 63 are secured, respectively, to the side plate 29 and the floor of the car above and below the post 54. The latch member 62 comprises an attaching flange 64 and a body portion 65, from which extend in opposite directions abutment flanges 66 and 67. The body portion 65, in addition, has secured thereto in spaced relation to the abutment flanges a plurality of oppositely extending flanges 68 and 69 which, as clearly shown in Figures 2 and 6 of the drawings, taper laterally as shown at 70 and longitudinally as indicated at 71.

The lower latch member 63 embodies an attaching flange 72, from which an abutment 73 rises. Extending from said abutment 73 in the direction of opening movement of the door is a central body portion 74, the upper portion 75 of which tapers downwardly as indicated in Figure 4 of the drawings. Oppositely directed tapered shoulders 76 and 77 extend from the body portion 74. Shoulders 78 and 79 extending in opposite directions from the central body portion of the latch member 63 are disposed in spaced relation to the abutment 73 so as to provide a post receiving recess 80. The attaching flange 72 tapers downwardly from each of the shoulders.

It will be apparent that the auxiliary door, in its movement toward closed position, will bring about engagement between the upper and lower portions of the post 54 with the abutment flanges 66 and 67 provided on the upper latch casting 62 and the abutment 73 provided on the lower latch casting 63 in order to limit said closing movement. As the door approaches the closed position the upper and lower latch members will be received within the recesses 60 and 61, respectively, formed in the upper and lower margins of the post. By reason of the fact that the door and, consequently, the post are in elevated position when the door is moved to closed position the flanges 68 and 69 provided on the latch member 62 and the shoulders 78 and 79 provided on the latch member 63 will be cleared by the shoulders 81 and 82 formed in the upper margin of the post by the recesses 60 and by the shoulders 83 and 84 formed in the lower margin of the post by the recess 61. In the event, however, that the door has not been elevated sufficiently so that such clearance is obtained sufficient elevation will be had by virtue of the inclined portions 71 provided on the shoulders 68 and 69 and the inclined portions on the attaching flange

of the latch member 63 leading from the shoulders 78 and 79. The position of the auxiliary door and the post 54 when elevated and at the end of their closing movement is illustrated in Figure 3 of the drawings. Upon lowering of the door and the post, said door and post assume the positions shown in Figure 2 of the drawings and it will be manifest that in such positions the shoulders 81 and 82 provided in the upper margin of the post will lie within the space between the abutment flanges 66 and 67 and the flanges 68 and 69 provided on the upper latch member 62 so as to prevent sliding movement of the door. Similarly, the shoulders 83 and 84 provided in the lower margin of the post will be seated in the recesses 80 provided in the lower latch member 63 so that the lower portion of the door is retained against sliding movement. The auxiliary door, consequently, will be latched in its closed position. It will be apparent that when it is desired to move the door toward open position elevation thereof will effect disengagement of the cooperating shoulders and flanges so that sliding movement of the door may be had. It will also be apparent, in view of the reception of the latch members within the recesses provided in the post, that lateral or outward movement of the door is obviated.

In Figures 8 to 11, inclusive, there is illustrated modified constructions pertaining to the upper and lower portions of the post and to the latching thereof in the closed position of the auxiliary door by means of which not only are the customary post latch members eliminated but fabrication of the post is also avoided. Accordingly, a bracket member 85 is secured to the depending leg 28 of the side plate. Within the bracket member 85 there is mounted by means of the pin and slot connection 86 and 87 a latch member 88. By virtue of the connection of the latch member 88 with the bracket 85 it will be clear that said latch member is capable of both pivotal and longitudinal movement. The forward end of the latch member is provided with a shoulder 89 which, by reason of its engagement with the adjacent portion of the bracket 85, limits the downward movement of the latch member. The latch member 88 extends downwardly below the bracket 85 and is provided with a recess 90 formed by the spaced shoulders 91 and 92. From these shoulders the depending portion of the latch member extend upwardly in opposite directions as indicated at 93 and 94.

The structure for latching the lower portion of the post when the door is in closed position is illustrated in Figures 10 and 11 of the drawings. A rigid latch member 95 having an attaching flange 96, by means of which said latch member is secured to the floor of the car, is utilized. An abutment 97 rises from the attaching flange 96 and lies in spaced relation to a shoulder 98 provided on the latch mechanism 95 so as to provide therewith a post receiving recess 99. The shoulder 98 is reached by means of a downwardly inclined portion 100.

Figures 8 and 10 of the drawings illustrate the upper and lower portions of the post in the closed position of the door. The latch members 88 and 95 are disposed in latching engagement with said portions of the post which are received, respectively, in the recess 90 of the latch 88 and the recess 99 of the latch member 95. To move the door toward open position the post 101 is elevated, whereby the lower portion thereof moves out of the recess 99 of the latch member 95. During this

elevation the latch 88 will move upwardly with the post, the upper portion of which remains in the engaging recess 90. As sliding movement of the door occurs the post and the latch 88 will move with the door. During the initial portion of such movement the inclined nose 94 of the latch member will engage the downwardly inclined flange 102 formed on the bracket member 85 so as to raise the latch 88 until the upper portion of the post 101 is disengaged from the post receiving recess 90 of the latch, whereupon continued sliding movement of the door may be had. It will be clear that the movement of the latch 88 during the initial sliding movement of the door is obtained by reason of the pin and slot connection of the latch with the bracket. When the door is returned to its closed position the upper portion of the post will engage either the inclined nose 94, if the latch has again assumed the position shown in Figure 8 of the drawings, or it will directly engage the shoulder 91 formed on said latch. The engagement of the post with the inclined nose 94 will effect elevation of the latch and permit seating of the post within the recess 90 so as to again latch the upper portion of the post in the closed position of the door. In the event of engagement of the upper portion of the post with the shoulder 91 said engagement will cause movement of the latch in the last step of sliding movement of the door, thereby producing lowering movement of the latch and the positioning thereof in latching engagement with the upper portion of the post. The lower portion of the post, of course, will be elevated so as to clear the shoulder 98 and the lowering of the door in the closed position thereof will again cause the lower portion of the post to be received within the recess 99. If the post has not been sufficiently elevated so as to clear the shoulder 98 in the closing movement of the door, engagement of the lower portion of the post with the inclined face 100 of the latch member 95 will cause the post to be elevated sufficiently so that the engagement with the recess 99 may be had. With reference to Figure 11 of the drawings, it will be clear that the post 101 is so positioned as to obtain overlapping engagement between the flanges thereof and the rigid latch member 95. Lateral movement of the door and the post is, consequently, avoided.

It will be apparent that the latching structures for the upper portion of the post may be utilized with either of the latching structures for the lower portion of the post and that any combination of the latching structure shown may be utilized. The combinations thus effected fall within the purview of the instant invention.

It will be apparent that numerous changes and modifications in the details of the invention will be clear to those skilled in the art. It is intended, therefore, that all such modifications and changes be comprehended within this invention, which is to be limited only by the scope of the claims appended hereto.

I claim:

1. In a railway house car having a sliding door, a post secured to the forward margin of said door and capable of vertical movement relative to said car, said post comprising a leg extending inwardly and transversely of said door and spaced flanges, a rigid latch member provided with an abutment secured to said car below said post, said leg engaging behind said abutment and said flanges lying on opposite sides of said latch member in overlapping relationship therewith in the

lowered position of said post when said door is closed, for the purpose set forth.

2. In a railway house car having a sliding door, a post secured to the forward margin of said door and capable of vertical movement relative to said car, said post comprising a leg extending inwardly and transversely of said door and a pivoted latch member secured to said car above said door post, said pivoted latch member having latching engagement with the upper margin of said post in the lowered position thereof when said door is closed.

3. In a railway house car having a sliding door, a post secured to the forward margin of said door and capable of vertical movement relative to said car, said post comprising a leg extending inwardly and transversely of said door, a latch member secured to said car above said post, capable of vertical and sliding movements relative to said car, said member having a hook portion engaging said post leg in the lowered position of said post to latch said door in closed position, said latch member being movable within said post when the latter has been elevated and the door has moved toward open position and means secured to the car side for releasing said latch member from said post at a predetermined point in the opening movement of said door.

4. In a railway house car having a sliding door, a post secured to the forward margin of said door and capable of vertical movement relative to said car, said post comprising a leg extending inwardly and transversely of said door, recesses formed in said leg, rigid latch members provided with abutments secured to said car above and below said leg, said latch members being received in said recesses and said leg being interengaged with said abutments in the lowered position of said post when said door is closed and means for elevating said post to disengage said leg from said abutments.

5. In a railway house car having a sliding door, a post secured to the forward margin of said door and capable of vertical movement relative

to said car, said post comprising a leg extending inwardly and transversely of said door, said leg being intact, a movable latch member secured to said car above said leg, a rigid latch member secured to said car below said leg, said latch members engaging said leg and latching said post in the lowered position thereof when said door is closed and means for elevating said post to release said leg from said rigid latch member, said leg being released from said movable latch member in the initial opening movement of said door.

6. In a railway house car having a sliding door, a post secured to the forward margin of said door, and capable of movement relative to said car, said post comprising a leg extending inwardly and transversely of said door, a recess formed in the upper portion of said leg, a rigid latch member provided with an abutment secured to said car above said leg, said latch member being received in said recess and said leg being interengaged with said abutment in the lowered position of said post when said door is closed, means for fastening the lower portion of said post to said car in said position of the door and means for elevating said post to disengage said leg from said abutment and said first-mentioned means.

7. In a railway house car having a sliding door, a post secured to the forward margin of said door, and capable of vertical movement relative to said car, said post comprising a leg extending inwardly and transversely of said door, a recess formed in the lower portion of said leg, a rigid latch member provided with an abutment secured to said car below said leg, said latch member being received in said recess and said leg being interengaged with said abutment in the lowered position of said post when said door is closed, means for fastening the upper portion of said post to said car in said position of the door, and means for elevating said post to disengage said leg from said abutment and said first-mentioned means.

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