

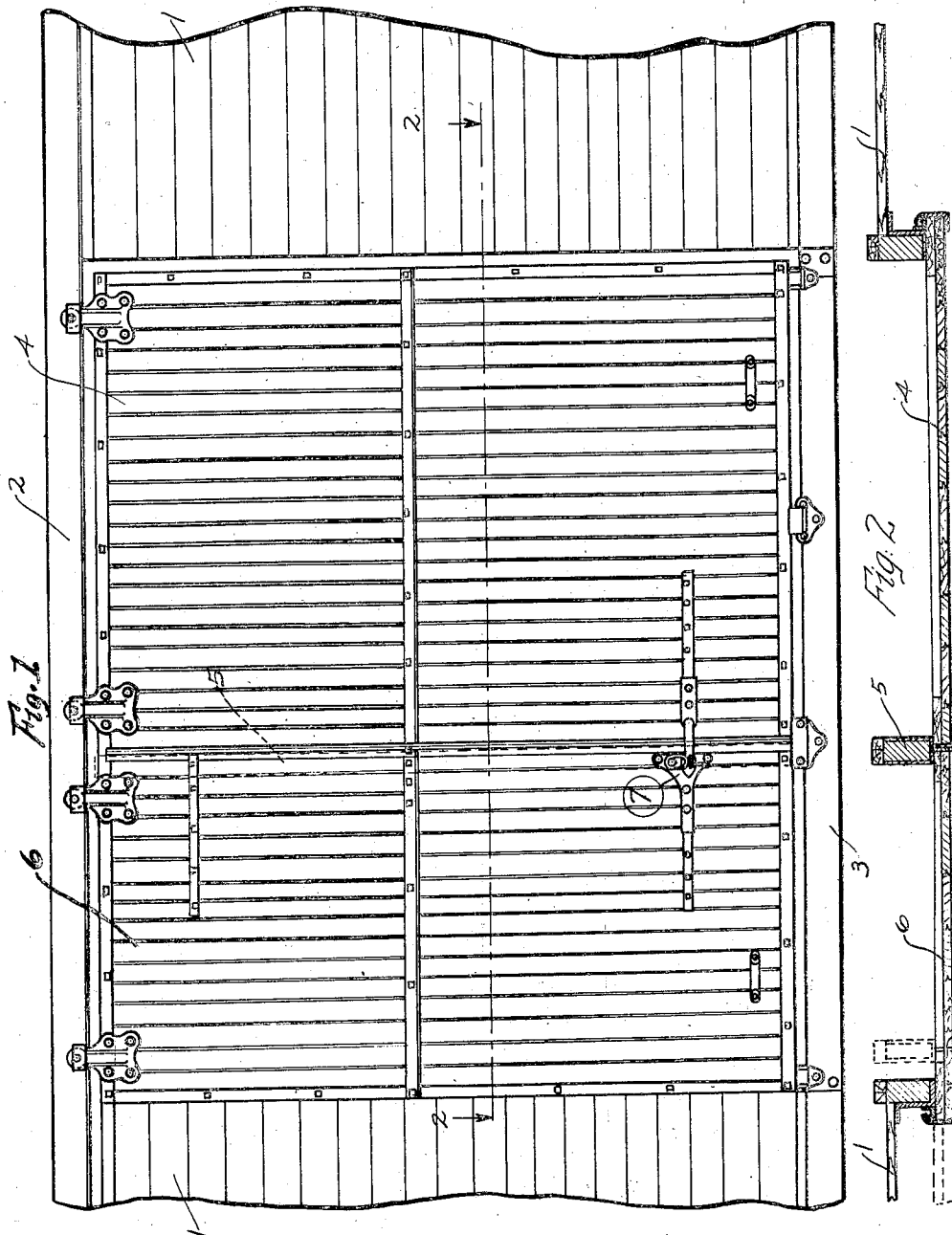
Oct. 13, 1925.

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C. E. EKLIND ET AL
SIDE DOOR CONSTRUCTION

Filed Nov. 24, 1924

3 Sheets-Sheet 1



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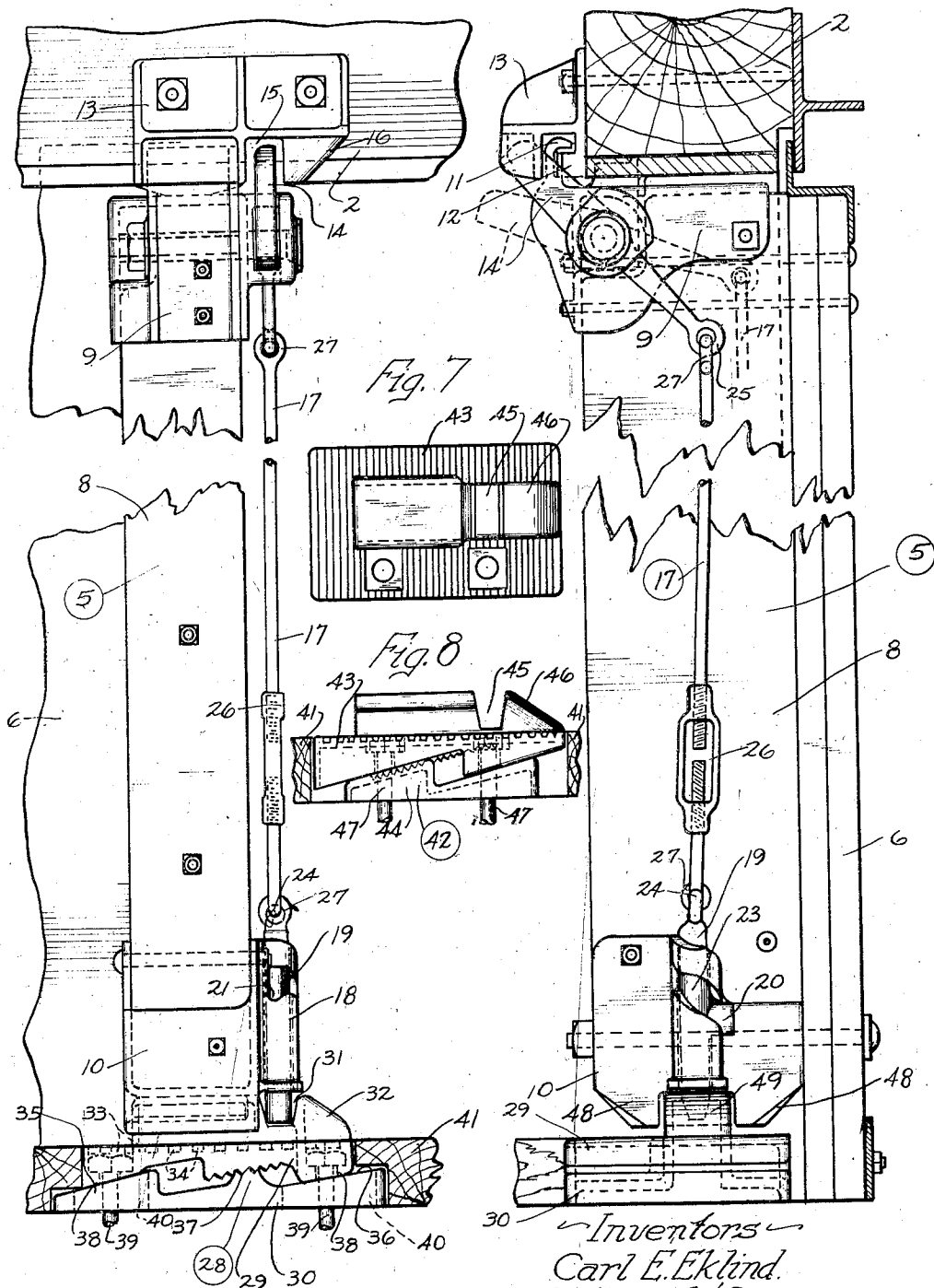
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Fig. 3

Fig. 4



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Fig 5

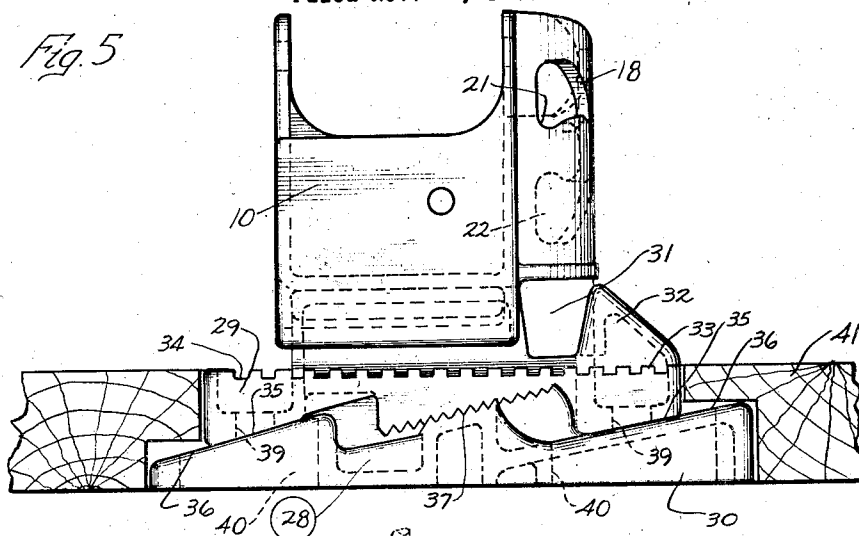
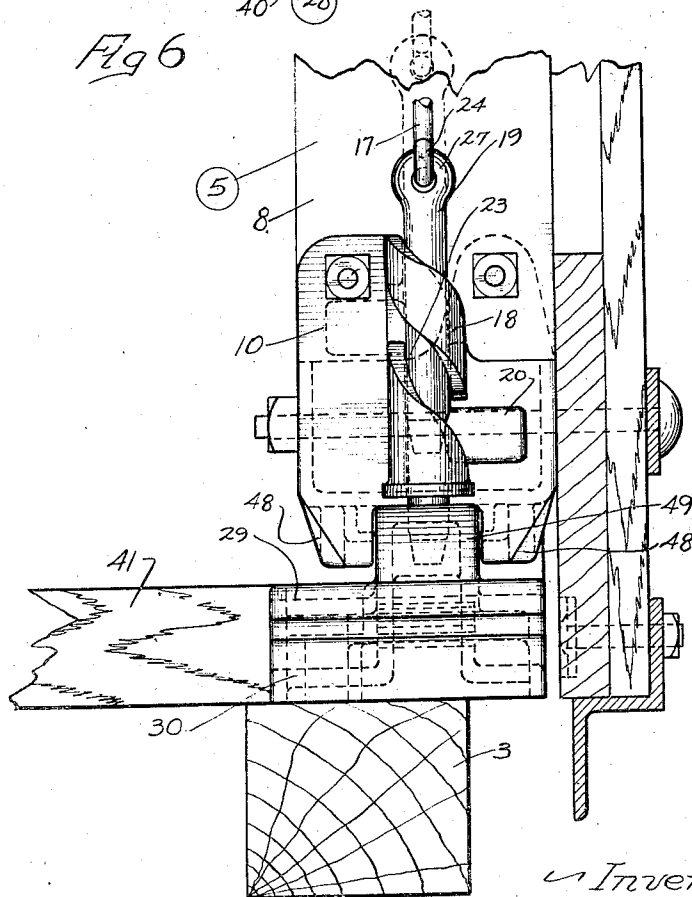


Fig 6



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UNITED STATES PATENT OFFICE.

CARL E. EKLIND AND WILLIAM W. DARROW, OF CHICAGO, ILLINOIS, ASSIGNORS TO
CAMEL COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SIDE-DOOR CONSTRUCTION.

Application filed November 24, 1924. Serial No. 751,771.

To all whom it may concern:

Be it known that we, CARL E. EKLIND and WILLIAM W. DARROW, citizens of the United States, residing, respectively, at Chicago, in the county of Cook and State of Illinois, and at Chicago, in the county of Cook and State of Illinois, have jointly invented certain new and useful Improvements in Side-Door Constructions, of which the following is a specification.

The present invention relates to side door construction.

Box cars for certain purposes, as for example box cars used in the transportation of automobiles and the like, must have side door openings of more than the usual width. Cars of this sort are commonly provided, in addition to the usual sliding door, with a secondary or supplementary door, sometimes narrower than the main door though not necessarily so, which secondary or supplementary door is slidably movable to provide a door opening of extraordinary width but which may be stationarily held when a door opening of such extraordinary width is not required. When the door opening of extraordinary width is not required, said secondary or supplementary door acts as a part of the car wall.

The construction above referred to ordinarily involves the use of a movable door jamb provided with means for locking same firmly in position and for permitting the sliding of said door jamb longitudinally of the car. Said secondary or supplementary door is ordinarily fixedly united to said door jamb, though said fixed connection is not essential. It frequently happens that, in car construction, material variation from specified dimensions occurs, and in view of the sliding and locking parts in connection with the movable door jamb herein referred to, considerable fitting is required before a satisfactory construction is had.

An object of the present invention is to provide an improved, sturdy construction in which adjustment is readily had to compensate for variations which may occur from specified dimensions.

A further object is to provide a side door construction which, while being adjustable, is sturdy and simple in construction.

A further object is to provide a side door construction which is adjustable to compensate for variation from specified dimensions

and which has the advantage that the secondary or supplementary door may be automatically locked in closed position when moved to said closed position and which may be readily unlocked when it is desired to move same from closed position.

A further object is to provide a sturdy and simple side door construction which provides adjustability in assembly, involving a minimum of parts.

A further object is to provide an improved locking construction having novel means for holding same releasably either in locking or unlocking position.

A further object is to provide locking mechanism automatically operable both at the top and bottom of the movable jamb, which locking mechanism may be readily adjusted to compensate for distortions which may be encountered in service.

Further objects will appear as the description proceeds.

Referring to the drawings—

Figure 1 is a fragmentary view in side elevation of a box car showing the main and supplementary doors in closed position. In this view the movable jamb is shown in dotted lines in its locked position.

Figure 2 is a sectional view taken along the plane indicated by the arrows 2—2 of Figure 1;

Figure 3 is a view, on an enlarged scale, of the movable jamb and the parts associated therewith whereby ready adjustability is had;

Figure 4 is a view of the movable jamb and parts associated therewith, said view being taken longitudinally of the car;

Figure 5 is a view, on a still larger scale, of part of the construction shown in Figure 3 and illustrating the details of the means for providing adjustability;

Figure 6 is another view of the construction providing ready adjustability, said view being taken from the same position as the view shown in Figure 4; and

Figures 7 and 8 are a plan view and view in side elevation, respectively, of a modified form of lower stop or detent member, which modified form is at present preferred in practice.

Referring first to Figures 1 and 2, the numeral 1 illustrates the side wall and the numerals 2 and 3 indicate respectively the side plates and side sills of a railway box

car. The numeral 4 indicates a sliding door, which for purposes of description, will be referred to in this specification as the main door. Said main door is adapted to cooperate with the post or jamb 5, which jamb is indicated in dotted lines in Figure 1. Preferably, though not necessarily, secured to the jamb 5 is the door 6, also slidable longitudinally of the car, which door 6 for the purposes of convenience is referred to in this specification as the supplementary door. According to the preferred embodiment of the present invention, the supplementary door 6 will be rigidly united to the jamb 5. Said jamb 5 is movable with the supplementary door 6 from the position indicated in full lines in Figure 2 to the position indicated in dotted lines in said figure. Mechanism is provided for releasably securing the jamb 5 in the position shown in full lines in Figure 2, which mechanism will be described in detail hereinafter.

The numeral 7 indicates as a whole locking and sealing mechanism whereby the main door 4 may be locked in its closed position. The doors 4 and 6 illustrated in Figure 1 are top hung, suitable track means and rollers being provided for facilitating the sliding movement of said doors. It will be apparent, however, as the description proceeds that the present invention is independent of the means for hanging the doors.

The door jamb 5 is a composite structure involving the post 8, which may be a timber, and certain castings located at the top and bottom ends of said timber, the casting at the top of said timber being indicated by the numeral 9 and the casting at the bottom of said timber being indicated by the numeral 10.

The casting 9 has an upwardly projecting portion 11 adapted to ride upon a track 12, which track 12 is provided by a casting 13 bolted or otherwise secured to the side plate 2. Said casting 9 also provides a pivotal mounting for a latch 14, which latch is indicated in Figure 4 in solid lines in its locking position and in broken lines in its open position. Said latch 14 cooperates with the casting 13 above referred to, and when the supplementary door 6 with its jamb 5 is in closed position, said latch will be located within a notch 15 in the casting 13, (see Figure 3). The casting 13 is provided with a sloping latch guiding portion 16, whereby to guide the latch 14 into the notch 15. The latch 14 is biased in a clockwise direction as the parts are viewed in Figure 4, the tie rod 17 serving, by reason of its weight, to bias the latch 14 in the manner described.

The casting 10 at the lower end of the timber 8 is provided with a bolt-carrying receptacle 18. The bolt 19 is operable in a

vertical direction within the receptacle 18, said bolt being provided with the laterally projecting lug 20. As shown in Figure 5, the bolt receptacle 18 is provided with a notch 21, which notch receives and holds the laterally projecting lug 20 in its uppermost position. Said bolt receptacle 18 is also provided with the recess 22 for preventing the accidental movement of the laterally projecting lug 20 from its lowermost position. Said recesses 21 and 22 are connected by means of the arcuate slot 23. The laterally projecting lug 20 is adapted to ride in said arcuate slot 23, from which fact it will be clear that in moving from its extreme upper to its extreme lower position, or reversely, the locking bolt 19 will be constrained to rotate about its axis. In order to permit this movement of rotation of the locking bolt 19, the tie rod 17, which connects the latch 14 with the locking bolt 19, has a loose connection with both latch 14 and locking bolt 19. In order to provide this loose connection the locking bolt 19 is provided with an eye portion 24 and the lower extremity of the latch 14 is provided with the eye portion 25. The tie rod 17 is adjustable in length and, for this purpose, is provided intermediate of its length with the turn buckle 26. Each end of the longitudinally adjustable tie rod 17 is provided with an eye portion 27. The loose connection provided by the eye portions referred to permits the necessary turning of the locking bolt 19 in its movement from open to closed positions and in its reverse movement.

The locking bolt 19 cooperates with a bottom detent, which will now be described. As referred to above, means are provided in carrying out the present invention for compensating for variations from specified dimensions in side door construction. For this purpose, the bottom detent cooperating with the bottom portion of the jamb 5 is made adjustable in a vertical direction. Referring to the construction shown in Figures 3, 4, 5 and 6, the bottom detent construction is indicated as a whole by the numeral 28. Said bottom detent construction consists of two members which have cooperating wedging surfaces, said two members being indicated by the numerals 29 and 30. The upper member, indicated by the numeral 29, is provided with a recess 31 for receiving the lower end of the locking bolt 19. It will be convenient to provide the lower end of the locking bolt 19 with the shape of a truncated cone, and the recess 31 may conform to this truncated shape. The member 29 may also be provided with the bolt-guiding portion 32, which portion 32 will have the function of raising the bolt 19 as the jamb 5 is moved toward closed position, whereby said bolt 19 may drop into its

recess 31. The upper surface of the member 29 may be provided with transverse ridges 33—33 separated by the recesses 34—34. By reason of this construction a lever may be inserted between the member 29 and the door jamb 5 in case sticking should occur. The lower portion of the member 29 is provided with bearing surfaces 35—35, which bearing surfaces are arranged in parallel relation with one another and in angular relation with the top surface of said member 29. The lower member 30 is provided with the bearing surfaces 36—36 arranged in parallel relationship with one another and in angular relation with the lower surface of said member 30. The bearing surfaces 35—35 of the upper member 29 are adapted to have slidable engagement with the surfaces 36—36 of the lower member 30. The upper member 29 between its bearing surfaces 35—35 and the lower member 30 between its bearing surfaces 36—36 may be provided with the interengaging toothed portions, indicated by the numeral 37, whereby to hold said members 29 and 30 in adjusted position relative to one another. It will be understood, of course, that when the bearing surfaces 35—35 of the upper member 29 are located upon the lowermost portions of the sloping bearing surfaces 36—36 of the member 30, the toothed portions 37 of said members 29 and 30 will be practically fully enmeshed. When the bearing surfaces 35—35 are located on higher regions of the sloping bearing portions 36—36, the toothed portions 37 of the members 29 and 30 will be less closely enmeshed but will still have abutting relationship, whereby to hold said members 29 and 30 in adjusted position. As shown in Figure 3, the upper member 29 is provided with bolt holes 38—38 in which the bolts 39—39 have a relatively close fit. The lower member 30 is provided with slots 40—40 for receiving said bolts 39—39. It will be clear that considerable adjustment is possible in the lower member 30 in the direction of its length. Adjustment in a vertical direction of the member 29 will be determined by the position of member 30 in the direction of its length. The toothed portions 37 of the two members 29 and 30 will hold said members 29 and 30 against relative movement. The bolt members 39—39 will hold said members 29 and 30 securely to the framework of the car. The flooring of the car, which is indicated by the numeral 41, will be put in place after the members 29 and 30 are mounted in their adjusted positions.

Referring now to the modified embodiment of the present invention illustrated in Figures 7 and 8, the bottom detent is indicated as a whole by the numeral 42, having the upper member 43 and the lower member 44, said members 43 and 44 having cooperat-

ing wedge-shaped portions whereby the effective height of said detent member 42 may be varied by varying the relative positions of members 43 and 44. The upper member 43 is provided with the bolt-receiving recess 45 and with the bolt-guiding portion 46. Said members 43 and 44 are provided with two cooperating smooth surfaces and with two cooperating toothed surfaces, said pairs of surfaces having the same general angularity relative to the floor of the car. The lower member 44 is movable in the direction of its length and, for this purpose, may be slotted longitudinally for the reception of bolts 47—47, which bolts may fit more or less closely in the upper member 43. According to the embodiment illustrated in Figures 7 and 8, the lower member 44 is of less length than the upper member 43 and, throughout the range of its movement, lies within the horizontal projection of the extremities of the upper member 43. By reason of this construction the flooring 41 may be designed to fit more or less closely to the extremities of the upper member 43, so that no fitting of the flooring is required after the relative adjustment of members 43 and 44 is accomplished.

It will be understood that means will be provided for guiding the supplementary door 6 and the movable jamb 5 in their travel between open and closed positions. This structure forms no part of the present invention and need not be described herein. Attention may be directed, however, to the guide members 48—48 (Figures 4 and 6), which are adapted to embrace the upper portion of the member 29, whereby to insure the proper locating of the jamb 5 so that the bolt 19 thereof may drop into the recess 31. Said guide portions 48—48 cooperate not only with the bolt-guiding portion 32 of the member 29 but with the portion 49, which projects upwardly from the member 29, said portions 32 and 49 being of less width than the remainder of member 29. The description applies also to the structure shown in Figures 7 and 8.

It will be clear without detailed explanation that in cases where the door construction varies from specified dimensions, the effective space for receiving the jamb 5 may be varied by the simple expedient of moving the lower member 30 (Figures 3, 4, 5 and 6) or the member 44 (Figures 7 and 8) in a direction longitudinally of the car. The latch member 14 and the bolt 19 are provided for the purpose of locking the jamb at its top and bottom portions when said jamb is in closed position. Said locking is accomplished automatically, inasmuch as said latch 14 and bolt 19 are biased by their own weight and by the weight of the extensible tie rod 17 into locking position. By reason of the turn buckle 26, the

effective length of the tie rod 17 may be varied, whereby, without the exercise of great care, secure locking at both top and bottom of the jamb 5 may be automatically accomplished, even though distortion of the car should occur in service. By reason of the recess 21 in the bolt receptacle 18, the bolt 19 and latch 14 may both be releasably held out of locking position. By reason of the recess 22, the bolt 19 and latch 14 are releasably held in locked position. As a practical matter, only by deliberate turning of the bolt 19 can the laterally projecting lug thereof be moved to a position to be free of the recess 22. Vertical movement of the bolt 19 which may occur due to shocks encountered in service will not result in the unlocking of bolt 19 and latch 14, inasmuch as engagement of the laterally projecting lug 20 in the recess 22 will prevent turning of said bolt 19.

Though a preferred embodiment of the present invention has been described in detail, it will be clear that many modifications will occur to those skilled in the art. It is intended to cover all such modifications that fall within the scope of the appended claims.

What is claimed is:

1. In a car, in combination, relatively stationary car structure, a movable door jamb, means for locking said jamb at the top and bottom portions of said jamb, means operable in a single movement for controlling both of said locking means, and adjustable means located adjacent to one end of said jamb having detent portions for engagement with said locking means.

2. In a car, relatively stationary car structure, a movable jamb, means for locking said jamb to said relatively stationary car structure, said means being located both at the top and bottom of said jamb, an extensible member for simultaneously controlling said locking means, said locking means including a rotatable member for holding said locking means selectively either in locking or unlocked position.

3. A detent for a movable door jamb, comprising a pair of superposed members having wedge-shaped engaging surfaces, and means for releasably holding said members in adjusted position.

4. In a car, relatively stationary car structure, a movable door jamb, detent mechanism for releasably locking one end of said jamb, said detent mechanism comprising a pair of relatively adjustable members having wedge-shaped engaging surfaces whereby the effective height of said detent mechanism may be varied by changing the positions of said members relative to one another.

5. In a car, relatively stationary car structure, a movable jamb and detent mechanism

located at one end of said jamb for holding said jamb in a predetermined position, said mechanism including two members having engaging surfaces arranged in angular relationship with the direction of the length of said jamb, and means for holding said members in adjusted position relative to one another.

6. In a car, relatively stationary car structure, a movable jamb, detent members secured to said relatively stationary car structure adjacent to the top and bottom portions of said movable jamb, mechanism operable in common for locking said jamb to said detent members, one of said detent members being adjustable in height whereby to compensate for variations in dimensions of said car structure and said jamb.

7. In a car, relatively stationary car structure, a movable door jamb, detent members carried by said relatively stationary structure at the two ends of said jamb, and locking mechanism carried by said jamb adapted to cooperate with said detent members, said locking mechanism including a rotatable member adjustable in length adapted to releasably hold said locking mechanism either in locking or unlocking position.

8. In a car, relatively stationary car structure, a movable door jamb, detent members carried by said relatively stationary car structure, locking mechanism carried by said jamb at the top and bottom thereof for cooperation with said detent members, one of said detent members being adjustable in the direction of the length of said jamb, and an extensible member adapted in a single movement to control the locking mechanism at the two ends of said jamb.

9. In a car, relatively stationary car structure, a movable door jamb, detent members carried by said relatively stationary car structure, locking mechanism carried by said jamb at the top and bottom thereof for cooperation with said detent members, one of said detent members being adjustable in the direction of the length of said jamb, and an extensible member adapted in a single movement to control the locking mechanism at the two ends of said jamb, said locking mechanism including a rotatable member adapted at one point of its rotation to hold said locking mechanism out of effective locking position and at another point of its rotation to hold said locking mechanism in effective locking position.

10. In a car, relatively stationary car structure, a movable jamb, means for locking said jamb to said relatively stationary car structure, said means being located both at the top and bottom of said jamb, and a member adjustable in length for simultaneously controlling said locking means.

11. A detent for a movable door jamb, comprising a pair of superposed members

having wedge-shaped engaging surfaces, certain cooperating portions of said surfaces being provided with cooperating teeth to prevent slippage, and means for releasably holding said members in adjusted position.

5 holding said members in adjusted position.

12. A detent for a movable door jamb, comprising a pair of superposed members having wedge-shaped engaging surfaces, certain portions of said engaging surfaces hav-

ing abutments to prevent slippage of said 10 members along said surfaces, and means for releasably holding said members in adjusted position.

Signed at Chicago, Illinois this 21st day of November 1924.

CARL E. EKLIND.
WILLIAM W. DARROW.