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OVERHEAD DOOR CONSTRUCTION

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2 Sheets-Sheet 1

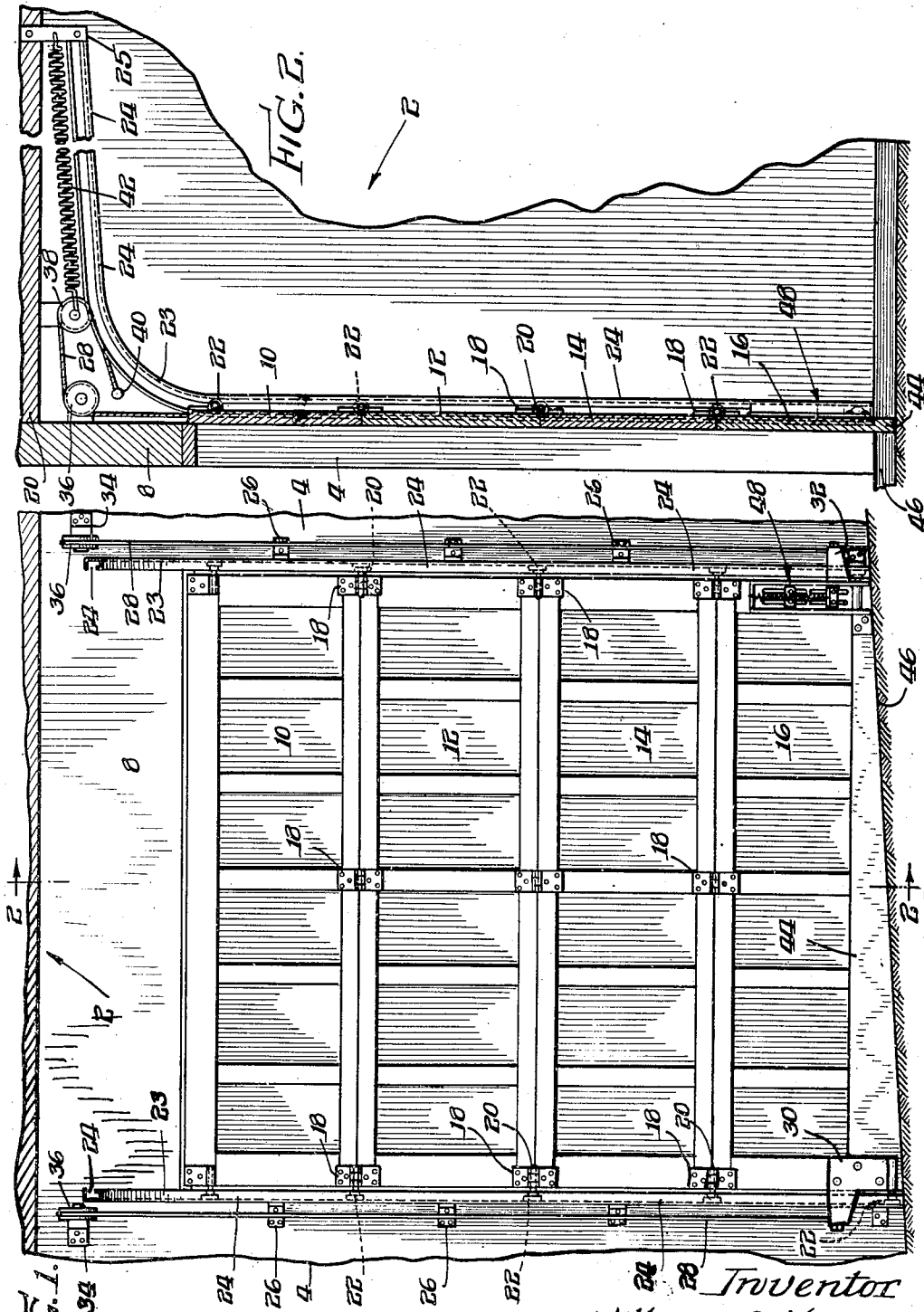


FIG. 1.

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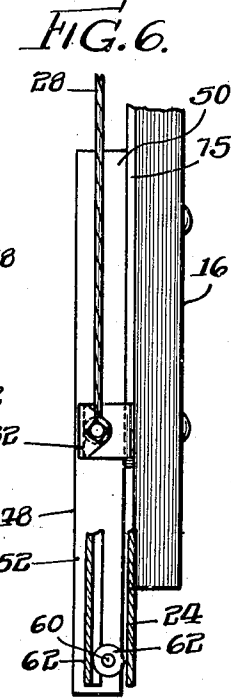
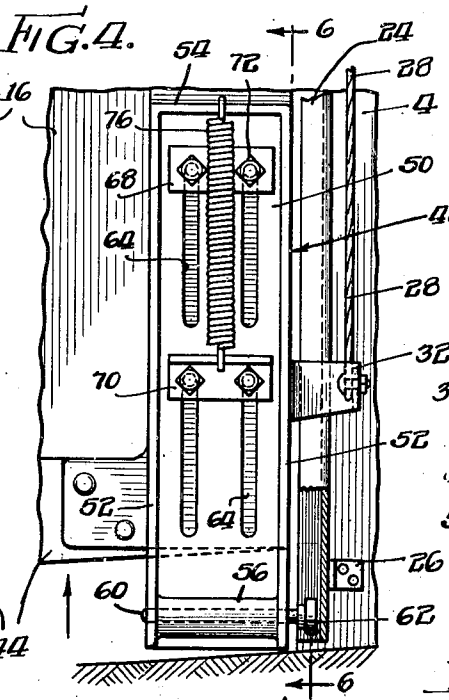
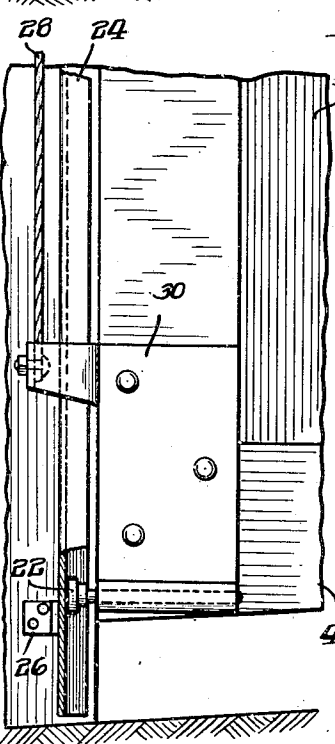
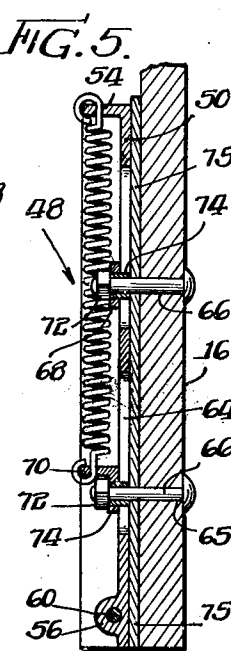
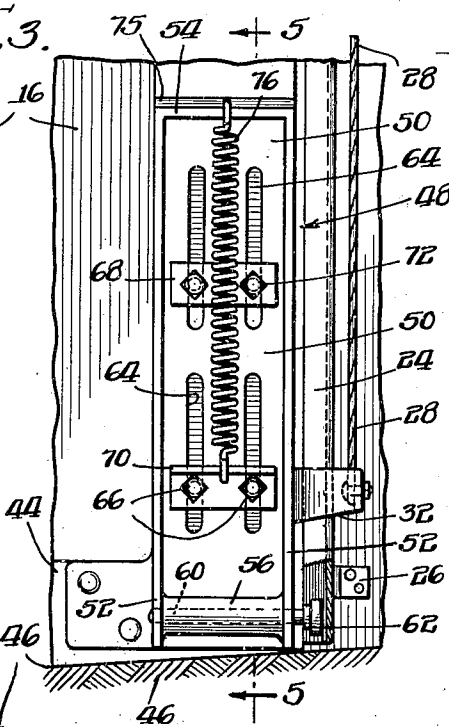
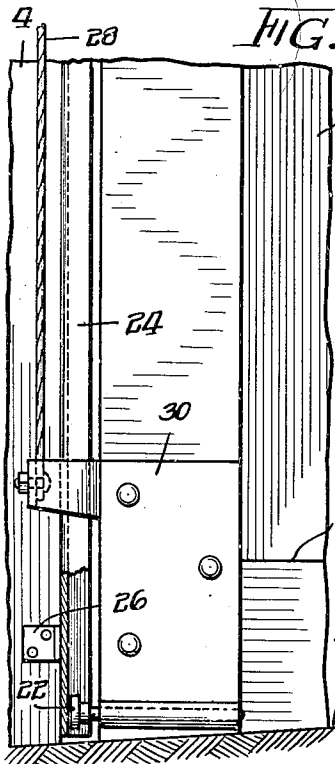
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OVERHEAD DOOR CONSTRUCTION

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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OVERHEAD DOOR CONSTRUCTION

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Application March 17, 1937, Serial No. 131,417

9 Claims. (Cl. 20—20)

This invention relates generally to an overhead door construction, and more particularly to overhead door structures adapted to be used in instances where the floor surface immediately beneath the closed door is inclined with respect to the horizontal from one side of the door to the other.

In a number of instances floors in garages and the like slant considerably so as to necessitate the provision of an extension along the lower edge of the conventional door provided with a slant or inclined lower edge, which conforms with the inclined or slanting contour of the floor. For example, in instances where garages and the like are installed on a hillside, the garage floor of necessity inclines or slants considerably from one side of the garage door opening to the other. In providing an extension or auxiliary door section, as mentioned above, to conform with the slanting of the floor, a problem is presented in shifting the door with its extension along the curved section of the guide rails. In other words, if a conventional overhead type door, having pintles or rollers positioned at opposite sides of the door at the lower end thereof, is provided with an extension of the type referred to above, and this extension is of any appreciable size or vertical width, it will not clear the door frame in the vicinity of the upper portion of the door opening when the lower portion of the door panel shifts along the curved sections of the track.

In order to shift the lower portion of a garage along the curved sections of the track without experiencing canting and consequent binding thereof, the oppositely disposed pintles must be in substantial co-axial alinement in passing along the curved track sections. It is, therefore, one of the important objects of the present invention to provide a garage door construction of the overhead type, wherein the lower portion of the door is provided with an appreciable extension to accommodate the inclined or slanted surface of the garage floor, and wherein this extension, together with the adjacent structure of the door, will pass freely along the curved section of the guide rails without interference with the door frame and without any possibility of canting or binding.

More specifically, the invention contemplates the provision, in an overhead door of the type just referred to, of means whereby the automatic shifting of the pintle at the high side of the floor engaging portion of the door takes place to insure co-axial alinement of the oppositely dis-

posed pintles as they pass along the curved section of the track.

Still more specifically, the invention contemplates the provision, in combination with a shiftable overhead door of the type referred to above, of a shiftable pintle carrying member mounted upon the lower portion of the door at one side thereof, said member being shiftable as an incident to the closing of the door and automatically shiftable upon the opening of the door to render oppositely disposed pintles in co-axial alinement.

The foregoing and other objects and advantages will be more readily appreciated from the following detailed description when considered in connection with the accompanying drawings, wherein—

Figure 1 is a rear elevational view of an overhead door construction, representing one embodiment of my invention, the same being shown in operative association with a garage having an inclined floor;

Figure 2 is a vertical transverse sectional view of the overhead door construction, said view being taken substantially along lines 2—2 of Figure 1;

Figure 3 is an enlarged fragmentary elevational view of a lower section of the door structure, showing its engagement with the inclined floor;

Figure 4 is a view similar to Figure 3 showing the overhead door structure slightly raised from the floor;

Figure 5 is an elevational view taken on lines 5—5 of Figure 3, showing the connection of the slide to the lower door panel; and

Figure 6 is a sectional view taken on lines 6—6 of Figure 4, showing the slide in lowered position.

Referring now to the drawings more in detail, for the purpose of illustrating one practical application of my invention, but not by way of limitation, I have disclosed the same in operative association with a building or garage structure designated generally by the numeral 2 (Figures 1 and 2). The building structure is similar in many respects to conventional garages, and includes the usual door jambs 4 positioned on opposite sides of a door opening. The upper portion of the door opening is traversed by a frame structure 8.

The shiftable overhead door structure comprises a plurality of door sections or panels 10, 12, 14, and 16 (Figure 1). These sections are connected together intermediate the ends and at each end by a plurality of hinges 18. Each

cooperating hinge, disposed at the ends of a door panel, has a pin 20 extending therethrough. A pair of guide rails 24 are positioned at opposite sides of the door or garage opening and are supported by brackets 26, secured to the door jambs in any suitable manner. The guide rails extend in a vertical upright position to a point adjacent the frame structure 8. At this point the guide rails 24 are curved as at 23 to guide the door panels onto the horizontal section which is secured in position as by a depending bracket 25. The outer extremity of each of the pins 20 carries a roller 22, adapted to be guided within the companion guide rails 24 which consequently guide the door sections. These pin and roller devices may properly be referred to as pintle type guide means.

The means for lifting the door sections or panels comprises a pair of flexible lifting elements or cables 28, disposed adjacent the companion guide rails 24 and at each side of the door opening. At one side of the lower section or panel 16 one of the cables 28 is connected to the lowermost portion of the section by a bracket member 28. The cooperating cable is secured at the other side of the panel at its lowermost portion to a bracket 32 (Figure 1).

A pair of brackets 34 are secured to the garage 2 in any suitable manner, and each bracket has mounted thereon a pulley or sheave 36. Each cable 28 extends vertically upward and about a companion pulley or sheave 36 and around a second pulley or sheave 38 (Figure 2), and is anchored at 40 to the garage in any convenient manner. The sheave 38 is carried at one extremity of a counterbalanced lifting spring 42, the spring at its other end being anchored to the bracket 25 which extends from the garage 2.

From the foregoing it will be apparent that through the agency of the pintle type guide means 20—22, carried by the door, the guide rails 24, the cables 28 and the spring 42, said door may be shifted with ease between a substantially vertical closed position and a substantially horizontal overhead open position.

The lower panel 16 is provided with a lower section or extension 44 (Figure 1), which has an inclined underface or edge for engaging a similarly inclined floor 46. The extension 44 is supported at one side of the section 16 by the bracket 30, the other side being supported by the bracket 32. Adjacent the bracket 32, the lower door section 16 has a rectangular-shaped slide or pintle adjusting mechanism designated generally by the numeral 48. This slide is comprised of a back plate 50 which has at each side a vertically disposed flange 52, and at the top a horizontally disposed flange 54 (Figures 3 and 5). The flanges 52 at their lower extremities support a bearing member 56.

The bearing 56 supports a pin or pintle 60, which at its outer extremity carries a guide roller 62 corresponding with rollers 22, and which is adapted to engage the guide rail 24. The back plate 50 is provided with four vertically extending slots 64 (Figures 3 and 4), two upper and two lower slots in all.

The door section 16 carries four bolts 66, the upper two of which extend through the upper slots 64 into engagement with an upper cross bar 68, and the lower two extending through the lower slots 64 and carrying an angle bracket or cross bar 70. Nuts 72 on the bolts 66 are tightened against collars 74, the axial length of these collars being sufficient to enable free sliding

movement between the slide or plate 50 and a plate 75 fixed to the panel 16. This structural arrangement is to allow the slide 50 to vertically reciprocate upon the bolts 66 within the limits determined by the length of the elongated slots 64.

A tension spring 76 is anchored at one end to the top flange 54 and at its other end to the angle bracket 70 (Figures 3 and 5). The purpose of this spring is to provide means for moving the slide 50 downwardly to bring the pintle type guiding means 60—62 into co-axial alignment with an oppositely disposed guiding means 20—22 adjacent the bracket 30, after the door panels have been slightly raised from the floor. The roller 62 is maintained in co-axial alignment with the cooperating roller 22 to prevent any possibility of the door structure canting or binding when the lower section of the door is shifted along the curved section 23 of the guide rails 24.

Operation

As the door section 16 approaches the limit of its downward movement, the slide 50 extending below the lower inclined section 44 abuts the inclined floor 46 and is caused to slide vertically upward against the action of the spring 76. The length of the slots is dependent upon the required vertical movement of the slide 48 to accommodate the inclination of the floor. When the door structure is lifted or shifted upwardly the slide 48 (Figure 4) is automatically moved downward by the tension of the spring 74 to bring the roller 62 into co-axial alignment with the roller 22 adjacent the bracket 30 (see Figure 4). This coaxial alignment of the pintle type guiding means prevents any canting and consequent binding of the door structure as it passes along the curved sections 23 of the guide rails 24.

From the foregoing it will be apparent that my invention contemplates the provision of an automatically operable adjusting means of improved practical construction for shiftable overhead door structures, which will align the guide rollers to provide free and easy shifting of the door along the curved section in the guide rails.

By providing automatically operable means in association with an overhead type door for insuring co-axial alignment of the pintle type guide means or rollers, the use of a lower extension having an inclined lower engaging edge is made possible. In other words, unless mechanism is provided to effect lateral shifting of at least one of the oppositely disposed guide means, it is not possible to move the lower portion of the door along the curved section of the guide rails without experiencing canting. By having the control mechanism for the guide roller shiftable as an incident to the movement of the door, said roller is laterally shifted out of alignment with the oppositely disposed roller to permit the high side of the floor to be engaged by the lower edge of the door extension. Likewise, by using yieldable means for constantly urging the slide of the control mechanism for the roller in a downward direction, the co-axial alignment of the guide rollers is automatically accomplished the instant the door is raised from the floor.

The invention obviously is not limited to the specific structural features disclosed herein, but is capable of other modifications and changes without departing from the spirit and scope of the appended claims.

Having thus described my invention, what I 75

claim as new and desire to secure by Letters Patent is:

1. In an overhead door structure for garages and the like having the floor engaged by the door inclined from one side of the door opening to the other, a shiftable door member having the lowermost edge thereof configured to conform with the inclined surface of the floor, means including upper curved guide sections for guiding said door member between a substantially vertical closed position and horizontal open position, and oppositely disposed guide pintles associated with the lower portion of said door member, at least one of said pintles being laterally shiftable with respect to the other for insuring co-axial alinement of said pintles when shifting between vertical and horizontal positions.

2. In an overhead door structure for garages and the like having the floor engaged by the door inclined from one side of the door opening to the other, a shiftable door member having the lowermost edge thereof configured to conform with the inclined surface of the floor, means including upper curved guide sections for guiding said door member between a substantially vertical closed position and horizontal open position, oppositely disposed guide pintles associated with the lower portion of said door member, at least one of said pintles being laterally shiftable with respect to the other for insuring co-axial alinement of said pintles when shifting between vertical and horizontal positions, and pintle supporting means shiftable as an incident to the movement of the door member.

3. In an overhead door structure for garages and the like having the floor engaged by the door inclined from one side of the door opening to the other, a shiftable door member having the lowermost edge thereof configured to conform with the inclined surface of the floor, means including upper curved guide sections for guiding said door member between a substantially vertical closed position and horizontal open position, oppositely disposed guide pintles associated with the lower portion of said door member, at least one of said pintles being laterally shiftable with respect to the other for insuring co-axial alinement of said pintles when shifting between vertical and horizontal positions, shiftable pintle supporting means carried by the door, and means for yieldably urging said shiftable pintle supporting means toward the position of co-axial alinement of said oppositely disposed guide pintles.

4. In an overhead door structure for garages and the like having the floor engaged by the door inclined from one side of the door opening to the other, a shiftable door member having the lowermost edge thereof configured to conform with the inclined surface of the floor, means including upper curved guide sections for guiding said door member between a substantially vertical closed position and horizontal open position, oppositely disposed guide pintles associated with the lower portion of said door member, at least one of said pintles being laterally shiftable with respect to the other for insuring co-axial alinement of said pintles when shifting between vertical and horizontal positions, and mechanism including a vertically shiftable pintle supporting slide member for effecting lateral shifting of the pintle supported thereby.

5. In an overhead door structure for garages and the like having the floor engaged by the door inclined from one side of the door opening to the other, a shiftable door member having

the lowermost edge thereof configured to conform with the inclined surface of the floor, means including upper curved guide sections for guiding said door member between a substantially vertical closed position and horizontal open position, oppositely disposed guide pintles associated with the lower portion of said door member, at least one of said pintles being laterally shiftable with respect to the other for insuring co-axial alinement of said pintles when shifting between vertical and horizontal positions, mechanism including a vertically shiftable pintle supporting slide member for effecting lateral shifting of the pintle supported thereby, and resilient means for urging said slide member toward the position of co-axial alinement of said oppositely disposed pintles.

6. In an overhead door structure for garages and the like having the floor engaged by the door inclined from one side of the door opening to the other, a shiftable door member having the lowermost edge thereof configured to conform with the inclined surface of the floor, means including upper curved guide sections for guiding said door member between a substantially vertical closed position and horizontal open position, oppositely disposed guide pintles associated with the lower portion of said door member, at least one of said pintles being laterally shiftable with respect to the other for insuring co-axial alinement of said pintles when shifting between vertical and horizontal positions, and mechanism for controlling the lateral shifting of at least one of said pintles including a pintle supporting slide member having an elongated opening therein and means fixed to the door member extending within said opening and cooperating therewith to guide said slide member during the shifting thereof.

7. In an overhead door structure for garages and the like having the floor engaged by the door inclined from one side of the door opening to the other, a shiftable door member having the lowermost edge thereof configured to conform with the inclined surface of the floor, means including upper curved guide sections for guiding said door member between a substantially vertical closed position and horizontal open position, oppositely disposed guide pintles associated with the lower portion of said door member, at least one of said pintles being laterally shiftable with respect to the other for insuring co-axial alinement of said pintles when shifting between vertical and horizontal positions, mechanism for controlling the lateral shifting of at least one of said pintles including a pintle supporting slide member having an elongated opening therein and means fixed to the door member extending within said opening and cooperating therewith to guide said slide member during the shifting thereof, resilient means having one extremity connected to the structure of said slide member, and means secured to the door structure providing a fixed connection for the opposite extremity of said resilient means.

8. In an overhead door structure for garages and the like having the floor engaged by the door inclined from one side of the door opening to the other, a shiftable door member having the lowermost edge thereof configured to conform with the inclined surface of the floor, means including upper curved guide sections for guiding said door member between a substantially vertical closed position and horizontal open position, oppositely disposed guide pintles associated

with the lower portion of said door member, at least one of said pintles being laterally shiftable with respect to the other for insuring co-axial alinement of said pintles when shifting between
5 vertical and horizontal positions, mechanism for controlling the lateral shifting of at least one of said pintles including a slide member provided with an elongated vertically disposed guide slot, elongated fastening means extending through
10 the door structure and into said elongated guide slot, said slot and fastening means cooperatively arranged to guide the slide in its vertical movements, a second fastening means extending through the door structure and slide, and spring means interposed between said last mentioned
15 fastening means and the structure of said slide for constantly urging said slide in a downward direction.

9. In an overhead door structure for garages and the like having the floor inclined from one side of the door opening to the other, a door having an inclined lower edge parallel to said floor, means for guiding said door from a vertical
5 closed position to a horizontal open position, said means comprising a guide rail, a pair of vertically-spaced guide means carried at opposite side edges of said door for engaging said guide rail, one of said guide means being shiftable vertical-
10 ly relative to the door, and means for shifting said last-mentioned guide means into horizontal alignment with the other guide means upon opening of said door.

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