

Aug. 9, 1938.

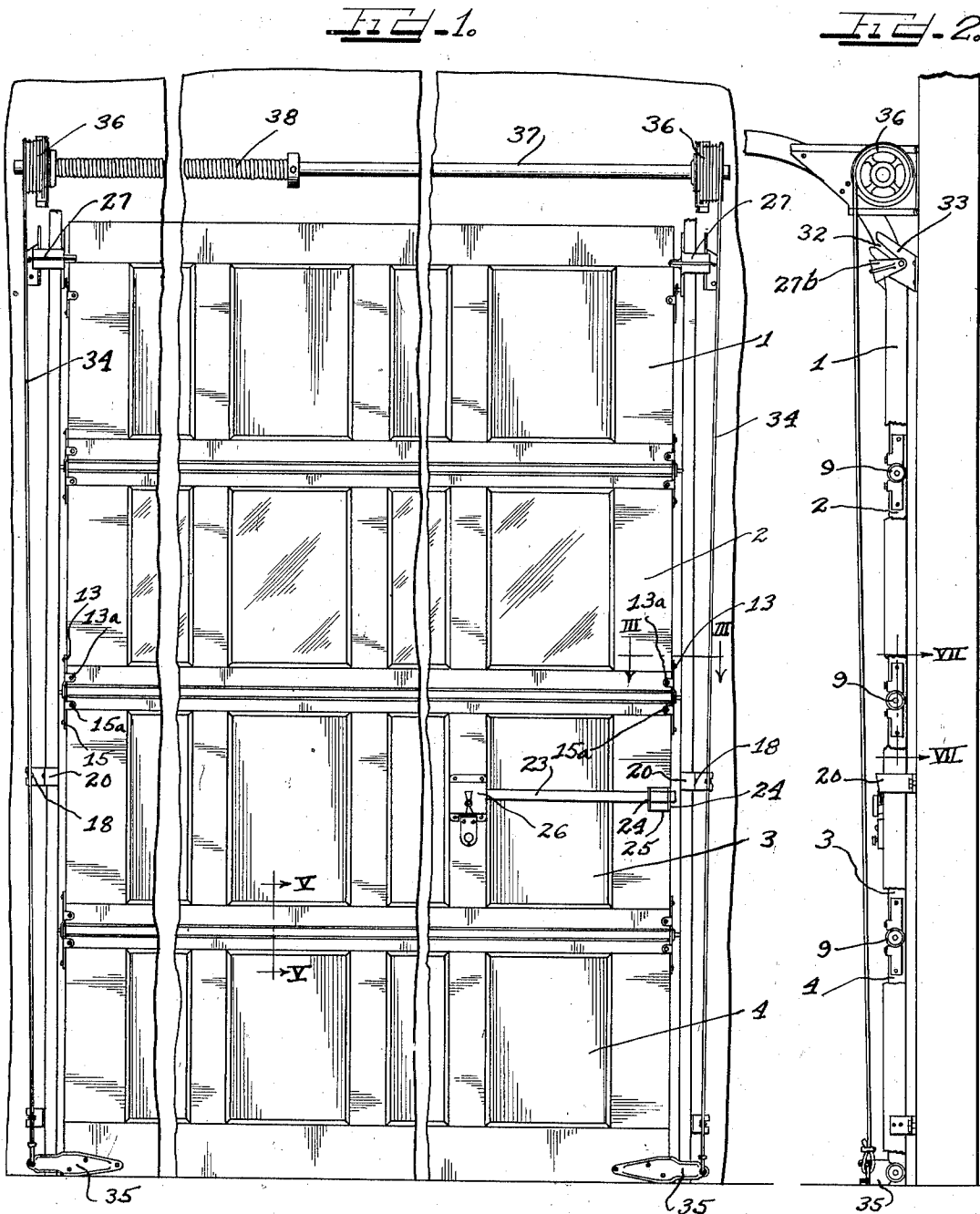
H. J. SIESS ET AL

2,126,418

SECTIONAL DOOR

Filed May 17, 1935

3 Sheets-Sheet 1



Inventors
Henry J. Siess.
Joseph E. Carve.

Joseph C. Casse.
Charles Mills. Atty.

Aug. 9, 1938.

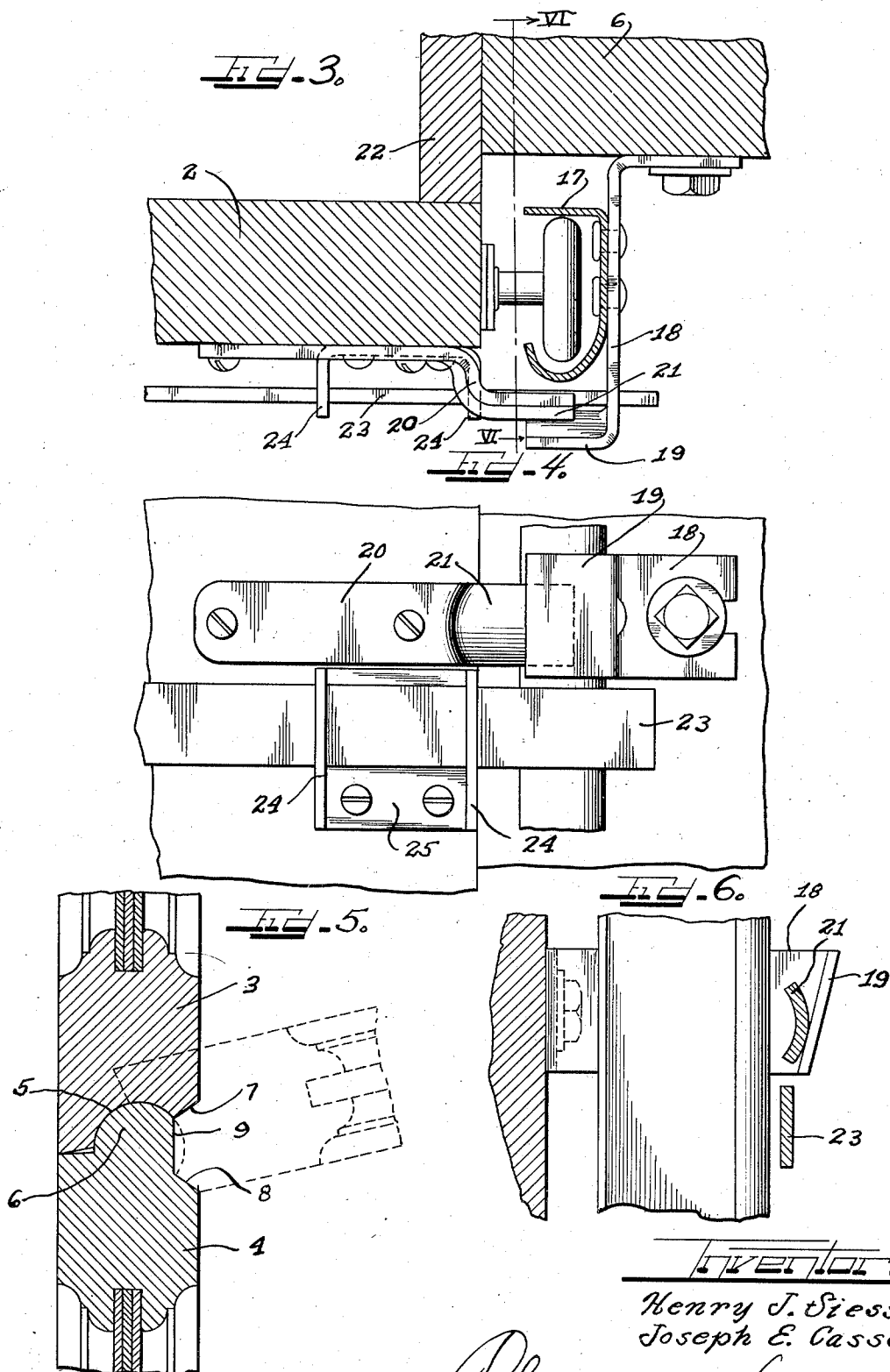
H. J. SIESS ET AL

2,126,418

SECTIONAL DOOR

Filed May 17, 1935

3 Sheets-Sheet 2



Inventors

Henry J. Siess.
Joseph E. Casse.

By Charles W. Mills Attys.

Aug. 9, 1938.

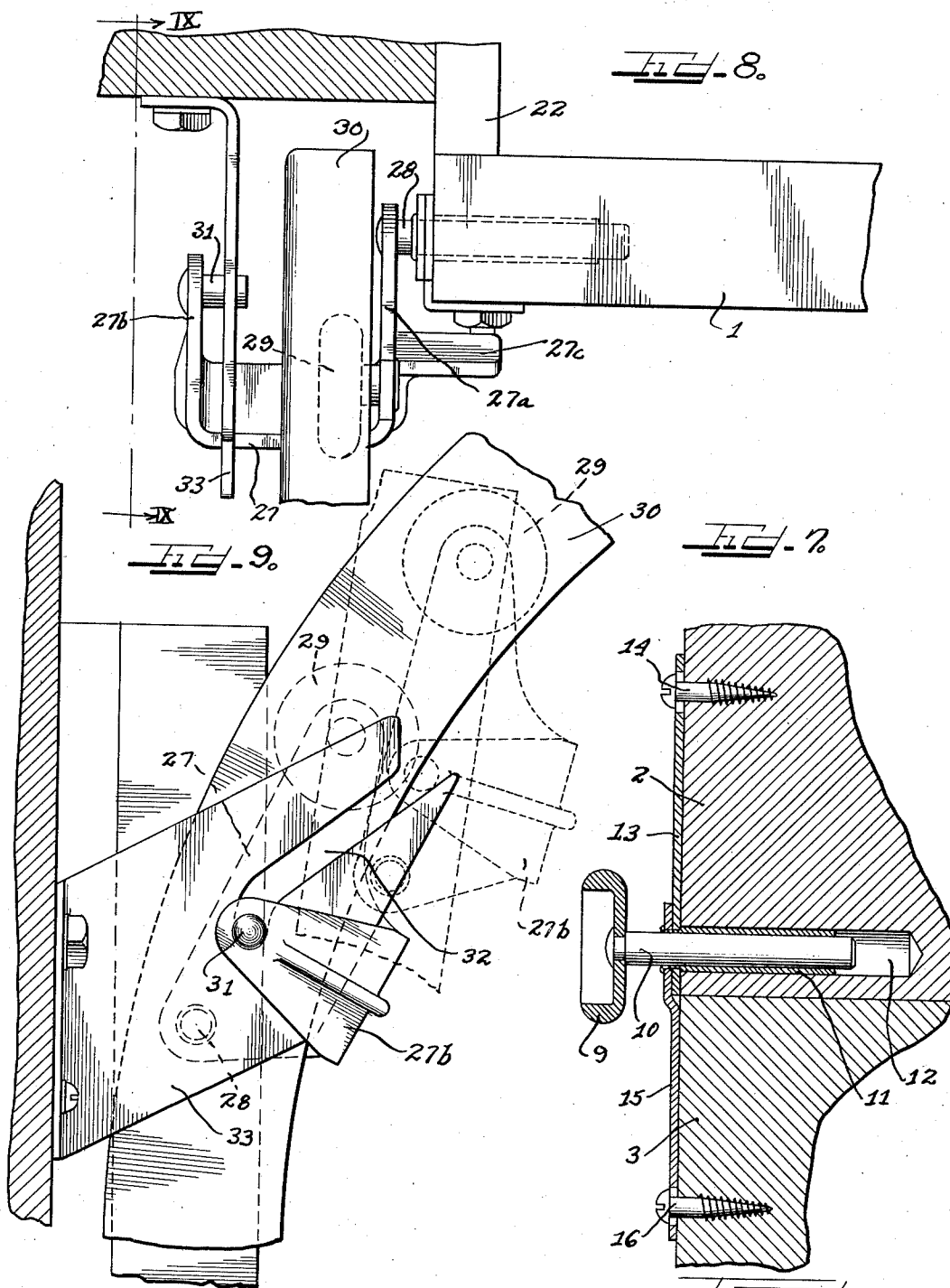
H. J. SIESS ET AL

2,126,418

SECTIONAL DOOR

Filed May 17, 1935

3 Sheets-Sheet 3



Inventors
Henry J. Siess.
Joseph E. Casse.

By *Charles H. Mills* Att'y.

UNITED STATES PATENT OFFICE

2,126,418

SECTIONAL DOOR

Henry J. Siess and Joseph E. Casse, Detroit,
Mich., assignors to Crawford Door Company,
Detroit, Mich., a corporation of Michigan

Application May 17, 1935, Serial No. 21,967

6 Claims. (Cl. 20—20)

This invention relates to a sectional door adapted for use upon garages and other buildings and concerns itself primarily with means for flexibly connecting the sections to provide a weather tight joint without the use of the common hinges now employed.

Secondary features of the invention when the same is applied to a garage resides in the means for forcing the upper end of the door inwardly when the same is elevated and for tightly pressing the same against its stops in its closed position.

The invention comprises the novel structure and combination of parts hereinafter described and more particularly pointed out and defined in the appended claims.

In the accompanying drawings, which illustrate a preferred form of this invention and in which similar reference numerals refer to similar features in the different views:

Fig. 1 is an interior elevational view of a garage door and parts appurtenanced thereto involving this invention.

Fig. 2 is a side elevational view of the door.

Fig. 3 is an enlarged sectional view taken upon the line III—III of Fig. 1.

Fig. 4 is an enlarged plan view of the structure shown in Fig. 3.

Fig. 5 is an enlarged sectional view taken upon the line V—V of Fig. 1.

Fig. 6 is an enlarged sectional view taken upon the line VI—VI of Fig. 3 with parts omitted.

Fig. 7 is an enlarged sectional view taken upon the line VII—VII of Fig. 2.

Fig. 8 is an enlarged fragmentary top plan view of the door and the means for guiding the same inwardly.

Fig. 9 is an enlarged elevational view taken substantially upon the line IX—IX of Fig. 8 looking in the direction of the arrows and illustrating in dotted lines the manner of forcing the door inwardly.

The sectional door involving this invention is shown in the drawings merely for the purpose of illustration as associated with portions of a garage and is designed to be moved to overhead position for opening the garage for the ingress or egress of vehicles. The door may consist of any desired number of sections. In the drawings, it has been shown as consisting of four sections 1, 2, 3 and 4. These door sections are similarly connected so that one section can flex or hinge upon an adjacent section. Figs. 5 and 7 illustrate the preferred method of connecting the sections and in referring to these figures, it

will be noted that one section which happens to be section 3, has a parti-spherical recess 5 and the adjacent section 40 has a parti-spherical rib 6 adapted to fit snugly in the recess 5. It will, of course, be understood that a similar joint exists between the sections 1 and 2 and 2 and 3. The sections of the door are cut away adjacent the joint therebetween upon their inner sides as indicated at 7 and 8 in Fig. 5. The rib 6 is also flattened upon its inner side as indicated at 9. The cut away parts 7, 8 and 9 form in effect a trapezoidal recess wherein the sloping shoulder 8 serves as a stop for the shoulder 7 as shown in dotted lines when the sections flex sufficiently.

The door sections 1, 2 and 3 are provided with rollers 9 upon the side edges thereof. These rollers are located slightly above the joints between the sections as shown in Figure 7 which also shows the roller construction as generally used. It will be noted that the roller 9 is rigidly secured to a shaft 10 that is journaled in a bearing sleeve 11 mounted in a bore 12 in the side edge of a door section. The shaft 10 may also slide to a limited extent in such bearing. The sleeve 11 extends a short distance beyond the edge of the door section and this extended portion is reduced. Fig. 7 shows a section of the door sections 2 and 3. A plate 13 is connected to the edge of the door section 3 by means of a screw 14 and this plate has an aperture that fits the reduced end of the sleeve 11. A plate 15 is secured to the door section 3 by a screw 16. The upper end of this plate is offset to overlap the plate 13 and it is also provided with an aperture to receive the reduced portion of the sleeve 11, the outer end of which is crimped over such plate. It will, of course, be understood that the door sections are connected together upon both sides in a manner similar to the showing in Fig. 7. The plates 13 and 14 allow the door sections to flex within the limits defined by the trapezoidal recess and actually serve to hinge the door sections. The plates 13 and 15 may be provided with side lugs 13^a and 15^a respectively that are attached to the sides of the door sections as shown in Fig. 1.

The shaft 10 of the roller 9 is rotatably and slidably mounted and is adapted for a limited longitudinal movement. It will be evident that the relatively long roller shaft will always maintain its position. It is not apt to wear loose and tilt and cause the roller to wobble during its travelling movements.

Mechanism has been provided for moving the door tightly against the stops in its closed position.

tion. This mechanism is located upon both sides of the door at a suitable point. In the present instance, it is shown slightly below the center line thereof. The mechanisms upon both sides of the door are the same and one of such mechanisms has been illustrated in Figs. 3, 4 and 6. In referring to these figures, it will be noted that the channel shaped track 17 cooperates with the roller 9 and is supported by a track bracket 18 attached to the building just below the center line of the door. This track bracket is different than the other track brackets in that it extends outwardly further and is provided with an inwardly directed flange 19 that slopes toward the door. A closing cover plate 20 is attached to the door at such a point as to engage the flange 19 during the final closing movements of the door. The closing plate 20 has an outwardly offset portion 21 that is curved or convex upon that face that engages the sloping flange 19 as shown in Figs. 4 and 6. As the door is lowered and approaches its final closing movement, the convex face 21 of the closing plate will engage the sloping flange 19 and be forced to ride inwardly over the same and force the door tightly against its stops which are designated by the reference 22.

Mechanism has also been provided for locking the door in its closed position. This mechanism is best shown in Figs. 1, 3, and 4, and consists of a lock bolt 23, the outer end of which is slidably supported in arms 24 of a U-shaped guide member 25 attached to the door section 3. This locking bolt 23 is operated by a key controlled lock 26 attached to the door section 3 as shown in Fig. 1. When the bolt 23 is extended, it will be located under the bracket 18 as shown in Figure 3 and prevent upward movement of the door. However, when the bolt is retracted, as shown in Fig. 1, it will clear the bracket 18 and allow upward movement of the door. The particular key controlled lock has not been illustrated as any suitable lock for such a purpose may be used.

In connection with the opening of the door, it is desirable to have some means for forcing the upper end of the door inwardly and causing the same to travel to overhead position. The means for accomplishing this purpose is best shown in Figs. 8 and 9. Such means is, of course, used upon both sides of the door, but that upon one side of the door only has been specifically illustrated. The illustrated means for accomplishing this purpose consists of a U shaped bracket 27, the inner arm 27^a of which is rigidly secured to a shaft 28 journaled in the upper end of the door section 1. This arm 27^a has a roller 29 shown in dotted lines attached thereto. This roller which may have a slight longitudinal movement, if desired, is adapted for engaging an inwardly curved angular track 30. The outer arm 27^b of said bracket has an inwardly directed stud 31 that extends into a slot 32 in a bracket 33 attached to the building. It will be noted that this slot 32 sloped upwardly and inwardly for forcing the bracket 27 in the same general direction as the door initially moves upwardly. Consequently, the door section 1 will be moved inwardly and cause the rest of the door sections to follow.

Extending inwardly from the arm 27^a of the bracket 27, there is a plate 27^c that is adapted to cooperate with the door section 1 to sustain the bracket 27 when the said section has moved sufficiently far inwardly to bring the stud 31 beyond the inner end of the slot 32.

The door is adapted to be pulled upwardly by means of cables 34 attached to corner brackets

35 upon the lower corners of the door and wound around drums 36 secured upon an operating shaft 37 mounted within the building. The shaft 37 is adapted to be actuated by a spring 38 but as such operating mechanism is old and common, a further description of the same is deemed unnecessary.

From the foregoing, it will be apparent that a novel hingeless sectional door has been invented that is superior to the hinged sectional doors now in use especially due to the fact that no cracks or crevices exist between the door sections and exceedingly weather tight joints are formed. It will further be appreciated that the closure means forces the door tightly against the stops and prevents the weather from entering between the door and building so that an effective weather tight construction is provided. It will be further evident that the guiding means for the upper section of the door is effective for causing the door sections to flex and move inwardly when the door is opened.

We are aware that many changes may be made and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and we do not therefore purpose limiting the patent granted hereon otherwise than necessitated by the prior art.

We claim as our invention:

1. In a building having a vertically movable sectional door adapted to be moved to overhead position, U-shaped brackets pivoted to the upper side edges of said door, and inwardly curved tracks upon said building adjacent said brackets, a roller on one arm of said brackets engaging said track, guide plates on said building having inwardly and upwardly directed slots, studs on the other arms of said brackets adapted for traveling in said slots, and a lug on said brackets for cooperating with said door.

2. A sectional door comprising a pair of sections, one of said sections having a rounded groove in one edge and the other having a rounded rib engaging said groove, one of said sections having a bore in a lateral edge, a sleeve bearing within said bore and extending beyond the edge of said sections, a plate secured upon the edge of one section and having an aperture through which the extended portion of said sleeve bearing extends, a plate secured to the other section and having an aperture through which the extended portion of said sleeve bearing extends, and a roller having a shaft journaled in said sleeve bearing.

3. In a sectional door comprising a pair of sections having their adjacent edges provided with contacting rounded parts for relative flexing relation thereof, a sleeve bearing extending inwardly from the side edge of one section adjacent the joint between said sections, a plate pivoted on said sleeve bearing and secured to said section, a second plate pivoted upon said sleeve bearing and secured to the other section, and a roller having a shaft journaled in said bearing.

4. In a building having a vertically movable sectional door adapted to be moved to overhead position, U-shaped brackets pivoted to the upper side edges of the door, inwardly curved tracks upon the building adjacent said brackets, a roller on one arm of each bracket engaging the adjacent track, guide plates upon the building and means on the other arms of said brackets cooperating with said guide plates for moving the door inwardly, said brackets having means for sup-

porting engagement with the door during a predetermined movement of the door.

5 In a building having a vertically movable sectional door adapted to be moved to overhead position, a two-armed bracket, means for pivoting one arm of said bracket to an upper side edge of the door, an inwardly curved track, a roller journaled upon said bracket for engaging said track, a guide plate on the building, said plate having an inwardly and upwardly inclined guide-
10 way and a stud on the other arm of said bracket adapted for movement out of and into said guide-way during the opening and closing movements of said door.

6. A sectional door comprising a pair of sections having interfitting parts between their adjacent edges, a plate secured upon the side edge of one section, a plate secured upon the side edge of the other section and extending in overlapping relation with a portion of the other plate, pivot means uniting the overlapping portions of said plates for providing a hinge point for said sections and a roller carried by said pivot means.

HENRY J. SIESS.
JOSEPH E. CASSE.

10