

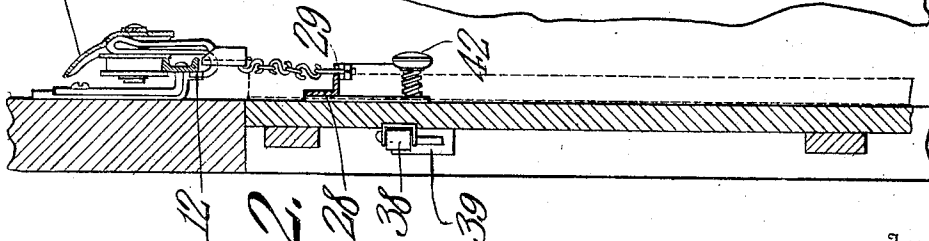
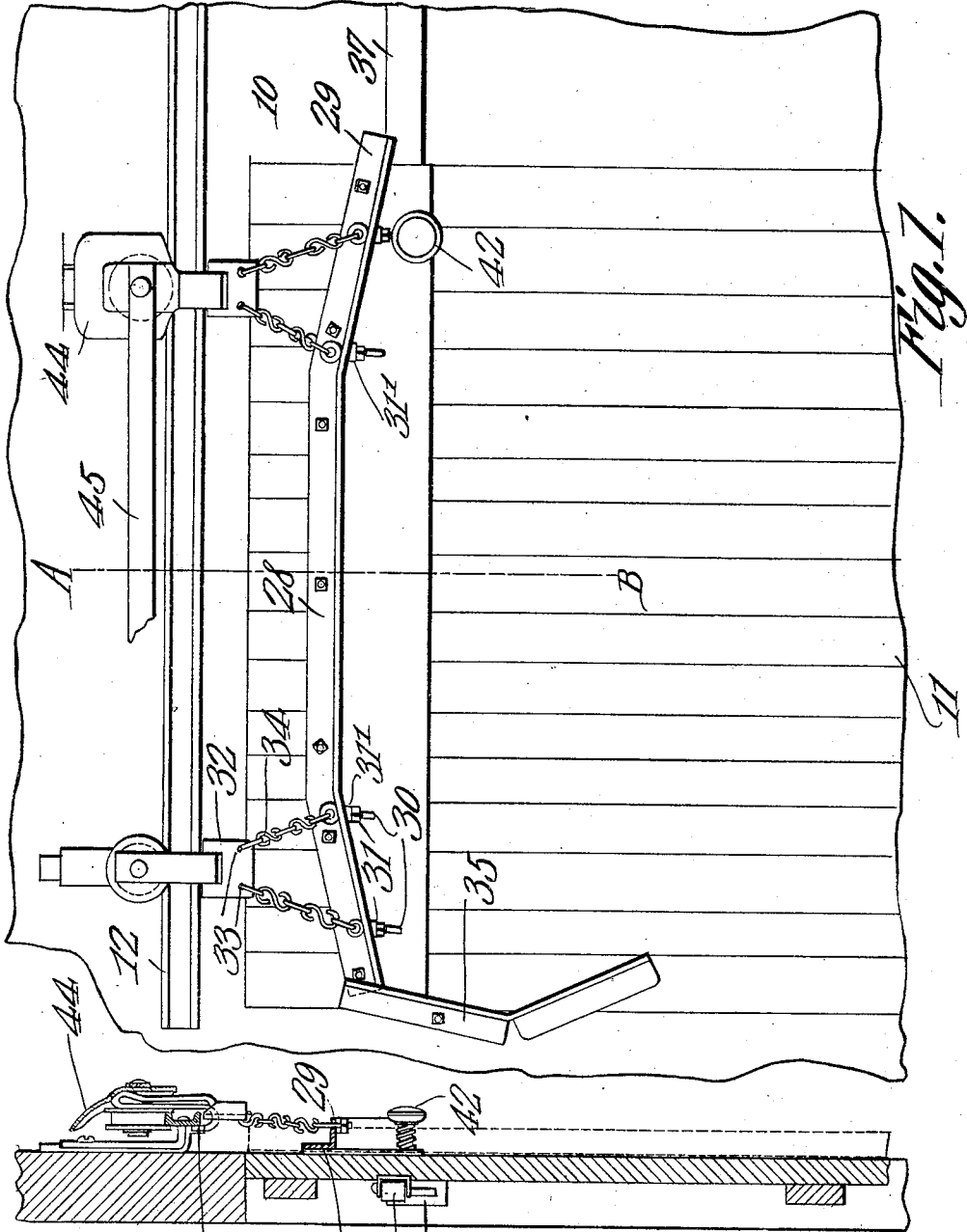
S. B. MARTIN.  
DOOR.

APPLICATION FILED AUG. 27, 1908.

Patented Sept. 7, 1909.

3 SHEETS—SHEET 1.

933,089.



Witnesses  
*E. J. Martin*  
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Fig. 2.

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*C. A. Snow & Co.* Attorneys

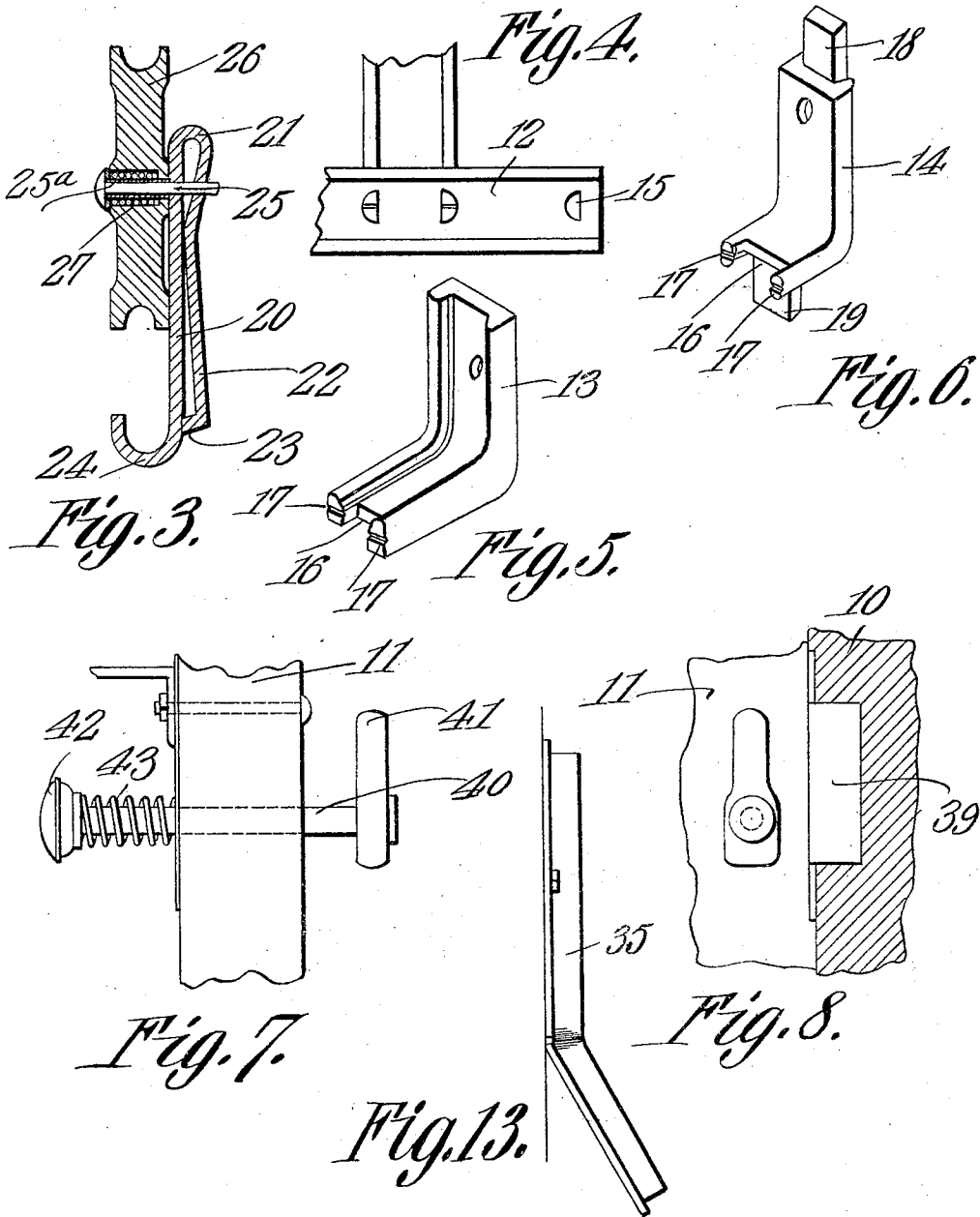
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3 SHEETS—SHEET 3.

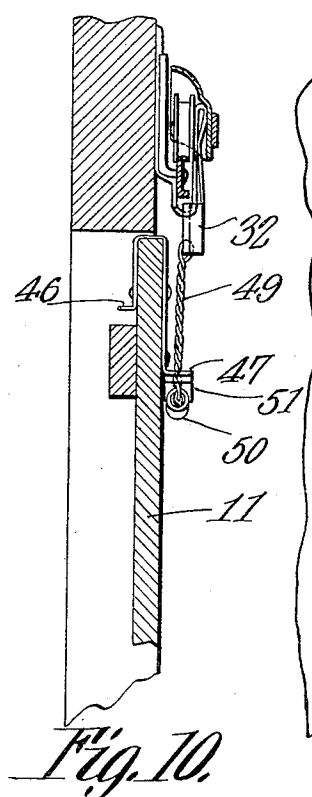


Fig. 10.

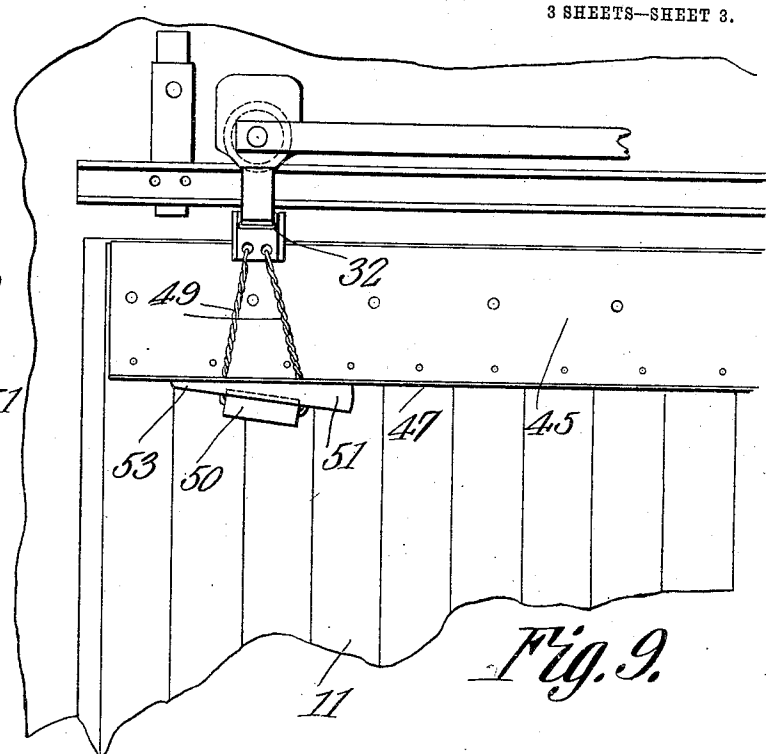


Fig. 9.

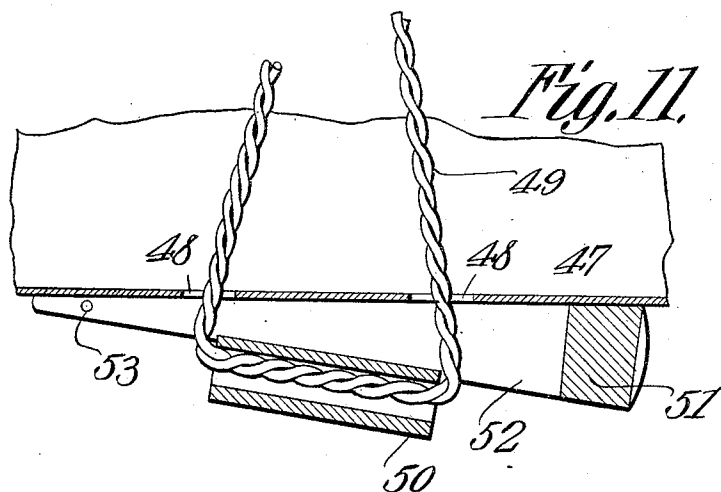


Fig. 11.

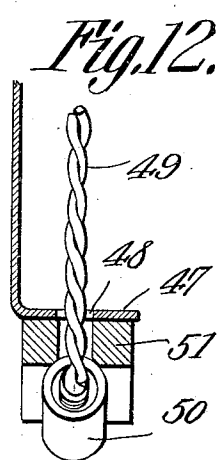


Fig. 12.

Witnesses

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# UNITED STATES PATENT OFFICE.

SAMUEL B. MARTIN, OF DALTON, OHIO.

## DOOR.

933,089.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed August 27, 1908. Serial No. 450,552.

*To all whom it may concern:*

Be it known that I, SAMUEL B. MARTIN, a citizen of the United States, residing at Dalton, in the county of Wayne and State of Ohio, have invented a new and useful Door, of which the following is a specification.

This invention relates to that type of door which is ordinarily used on barns, freight-cars, and the like.

The invention has special reference to means for suspending such doors.

In the usual manner of suspending barn doors, there is provided a rail or track, commonly consisting of a flat bar, although, in some instances, an I-beam is used. Both of these are found objectionable, the flat bar having little lateral strength, and the I-beam requiring a hanger with a pair of sheaves or rollers.

One of the objects of the invention is to provide an improved form of track, and an improved method of attaching the same to the supporting brackets.

Another object of the invention is to provide an improved means of suspending the door from the track.

A still further object of the invention is to provide an improved arrangement of certain details, which will automatically force the door within the frame as the door is moved laterally.

With the above and other objects in view, the invention consists, in general, of a door-frame, provided with a door adapted to fit therein, a channel or bead iron track attached to the door-frame in a novel manner, hangers rolling on said track, a novel means of suspending said door from said hangers, and a novel locking arrangement for the door.

The invention further consists in certain novel arrangements of details and combinations of parts hereinafter fully described, illustrated in the accompanying drawings, and specifically set forth in the claims.

In the accompanying drawings, like characters of reference indicate like parts in the several views, and:—Figure 1 is a front elevation of a door constructed in accordance with this invention. Fig. 2 is a section on line "A—B" of Fig. 1. Fig. 3 is a sectional view through one of the rollers. Fig. 4 is

a side elevation of a detail showing the manner of connecting the bracket and rail. Fig. 5 is a perspective detail of a bracket provided with a stop. Fig. 6 is a perspective of another form of bracket. Fig. 7 is a detail side elevation of the lock. Fig. 8 is a detail view, showing the lock from inside the door. Fig. 9 is a side elevation of a portion of the door equipped with a modified form of batten and suspension. Fig. 10 is a vertical sectional view of Fig. 9. Fig. 11 is an enlarged section through the adjusting mechanism used with this modification, the section being taken longitudinally thereof. Fig. 12 is a similar sectional view taken transversely thereof. Fig. 13 is a view showing in detail a cam lever used for deflecting the door.

The numeral 10 indicates the frame of the door, and at 11 is shown the door itself. This door is arranged to fit closely within the frame when closed. Held above the top line of the door opening is a rail, or track, 12. This rail or track is made of a peculiar form of channel iron, the flanges of which are substantially semi-circular in cross sections. The brackets supporting the rail are of two forms, one form being indicated at 13, and the other at 14. In both instances however the brackets are made of the same form of channel iron as the rail itself. In order to secure the rail to the bracket, the former is provided with a plurality of openings, 15. These openings are arranged in pairs, and correspond in shape to the flanges of the channel iron. At the outwardly projecting portion of the channel iron bracket, the web is cut away, as indicated at 16, in such manner as to leave the ends, 17, of the flanges projecting. These ends are inserted, in assembling the rail and bracket, in the openings, 15, and are then riveted over, thus securely locking the rail and brackets together. When it is desired to make the rail in more than one section, the pairs of openings 15, are so arranged that one of the openings will lie in one of the track sections, while the other opening lies in the other track section, the bracket thus constituting a joining means, as well as a support. The bracket that is used for making the splice is of the form shown in Fig. 6, the channel iron being bent so that the flanges lie on the outside of the bend. Be-

tween the flanges in this bracket there is provided a bar, 18, equipped with a downwardly bent end, 19, for the purpose of providing a rest for a dolly, when riveting the track section together. By reason of this form of construction the bar 18, is firmly held between the web of the channel iron and the frame of the door. The remainder of the brackets are preferably formed, as indicated in Fig. 5, with the flanges on the inside of the bend. This manner of constructing these brackets provides for a flat bearing surface against the door-frame.

The hangers proper are made with a bar iron frame. This frame consists of a flat or rectilinear portion, 20, a loop, 21, at the upper end, a straight portion 22, a re-bent portion, 23, contacting with the lower end of the portion 20, to brace the same with, and a hook, 24, at the lower end of the portion 20. The loop portion 21, is provided with suitable perforations, oppositely disposed, and a pin, 25, is held therein. A sheave, 26, provided preferably with roller bearings, 27, is mounted on this pin.

The door 11, is provided on the outside with a batten 28, of angle-iron, having a horizontal central portion and downwardly extending ends, one of which projects over the edge of the door, as indicated at 29'. This batten is so arranged on the door that one of the flanges projects horizontally from said door. The batten is provided near the outer edge of the horizontal flange with elongated apertures indicated at 29. Eye-bolts 30 are held in these apertures and are provided with suitable nuts 31 and beveled washers 31', on the batten, for the purpose of adjusting the length of the portion of the bolt above said batten. A link, 32, is held on the hook 24, being provided at its lower end with spaced apertures, 33, the apertures 33 being so spaced that they will be closer together than the ends of the connection between the hanger and the door. It will now be apparent that the adjustment of the eye-bolt 30 serves to raise or lower the door, as may be desired. By reason of the double suspension afforded by the chains 34, and the spread relation of the lower ends of those chains, there is provided a connection which is flexible, for movement in and out of the door-frame, but is sufficiently rigid laterally to move the sheave of the hanger quietly along the track, without jerking or jumping.

In order to automatically position the door within the frame, as the same is moved laterally, there is provided a cam lever 35, which is pivotally mounted at the side of the door-frame opposite to that toward which the door moves when open. This cam lever is so arranged that the upper end lies in the path of movement of the batten 28, and the lower end of this lever so bent

as to project over the face of the door when the batten 28 strikes the upper end, and rotates the same.

By reason of the peculiar means of suspension, the upper end of the door 11, will tend, at all times, to move inward. In order to prevent the scratching of the door-frame and side of the house or car, there is provided a metallic wearing-strip, 37, on the frame and side of the house, and the door carries on the back thereof a roller, 38, adapted to run on this wearing-strip.

The frame, 10, is rabbeted, as indicated at 39. Passing through a suitable opening in the door is a bar, 40, provided at its inner end with a counter-balanced locking finger, 41, arranged to position within the rabbet 39, when the bar is rotated. On the outside of the door the bar projects, and is provided with a knob, 42, or the like, for rotating the same. Between the knob and the door is held a spring, 43, surrounding the bar 40. By means of this spring, there will be a constant tendency for the finger 41, to move toward the door, thus, when the finger is in position within the rabbet 39, holding the door firmly within the frame. The rollers or sheaves may, if desired, be protected by means of a shield, 44, mounted on the outside of the sheave frame, and projecting upwardly and inwardly therefrom. A bar, 45, is preferably used to connect the rollers, or sheaves, so that they will be kept at the same distance apart at all times. This bar greatly facilitates the smooth movement of the rollers on the track.

In the modified form of the device shown in Figs. 9 to 12 inclusive, there are seen the various parts before described, with the exception of the batten 29, chains 34, and bolts and nuts 30, 31 and 31'. In place of these there is provided a batten 46 of substantially U-shape, arranged to incase the upper part of the door 11, the outer leg of the U being longer than the inner leg. Both the inner and outer legs are provided with flanges as indicated at 46 on the inside of the door and 47 on the outside. These flanges add greatly to the strength of the batten and door, and in addition the U shape of the batten serves to protect the upper edge of the door from weather and other damage. The flange 47 is provided with spaced perforations 48 and a twisted rod or wire 49 is attached to the hanger 32 and extends through these perforations. On the bight of this wire 49 is carried a pipe section 50, arranged to fit thereover. Between the pipe section 50 and the flange 47 is held a wedge 51 provided with the slot 52 throughout the greater part of its length. The wire 49, pipe 50 and wedge 51, are so arranged that the full length of the pipe section 50 is in contact with the wedge at all times. This arrangement is clearly shown in Fig. 11. The slot-

ted portion 52 of the wedge 51 is provided at its open end with a stop 53, consisting of a small bolt or wire, this stop being for the purpose of preventing the entire disengagement of the wedge from the pipe. In this case, when it is desired to adjust the height of either end of the door, the same may readily be done by properly positioning the wedge 51 with reference to the pipe 50, the latter being brought near to or forced farther from the flange 47 according as the wedge is moved in the direction of the thin or thick end.

In order to understand the operation of the device, let it be supposed that the door is open. In order to close the same it is moved first to cover the door opening. When this movement is nearly completed the batten 28 contacts with the cam lever 35 and forces the cam lever around. The lower end of that lever then moves over the surface of the door and forces the door bodily inward into the frame. The other end of the door may then be pushed into the frame and the knob 42 rotated. This will cause the finger 41 to take position within the rabbet 39, and by means of the spring 43 the door will be held firmly within the frame. At the same time the projecting end 29 of the batten will contact with the side of the building, and prevent the door from moving in too far. In opening the door, it is simply necessary to unlock the same by the rotation of the knob, 42, and the door will then swing outward at that edge sufficiently far to pass over the face of the frame, when it may be moved to the open position.

It is obvious that minor changes may be made in the form and proportions of this device, without departing from the material principles thereof. It is not, therefore, desired to confine the invention to the exact form herein shown and described, but it is wished to include all such as properly come within the scope thereof.

In order to prolong the life of the pin 25 a bushing 25<sup>a</sup> is preferably placed thereon where the balls 27 bear. It will be seen therefore that when this bushing becomes worn it can be easily removed and another one substituted therefor.

Having thus described the invention, what is claimed is:—

1. The combination with a structure having a door opening, of a track supported above said opening, wheel-supported hangers movably mounted upon the track, a door, flexible connections between the door and hangers, and pivoted means in the path of and actuated by the door for automatically shifting said door laterally into the door opening during the completion of the movement of the door in one direction.

2. The combination with a structure having a door opening, of a track above the

opening, hangers movably mounted on the track, a door, flexible elements secured to the hangers and adjustably connected to the door, said elements being disposed in downwardly diverging pairs and held taut at all times by the weight of the door.

3. The combination with a structure having a door opening, of a track above said opening, hangers movably mounted upon the track, a door, flexible connections between the door and hangers, said connections being arranged in pairs, a pivoted cam upon the structure and in the path of the door, and means upon the door for swinging the cam against the door to shift said door laterally and into the door opening.

4. In a device of the kind described, a frame for a door-opening, a track supported above the door-opening, a door adapted to fit within said door-opening, a door-hanger, a link attached to said hanger, provided with a pair of spaced apertures at its lower end, an angle-iron batten on the door, having one of its flanges projecting horizontally therefrom, and provided with a pair of apertures in the projecting flange, spaced at a greater distance than the apertures in the links, eye-bolts held in said apertures, nuts on said eyebolts beneath said projecting flange, and chains connecting said link and eye-bolts.

5. In a device of the kind described, a frame for a door-opening, a track supported above the door-opening, a door adapted to fit within said door-opening, hung from said track, a projection on said door, a pivoted cam-bar on the frame, having one end on the path of said projection, and the other end bent to contact with the outside of the door, and force it into the frame as the door is moved laterally, and a lock for the side of the door opposite the cam-bar.

6. The combination with a structure having a door opening, of a track above said opening, hangers movably mounted on the track, a door, flexible devices connecting the hanger and door, the said devices being disposed in pairs, the devices of each pair diverging downwardly, a cam lever upon the structure and in the path of the door, and means carried by the door for engaging the lever to shift it and direct the door laterally into the opening.

7. The combination with a structure having a door opening, of a track above said opening, hangers movably mounted on the track, a batten upon the door, flexible devices secured to the hangers and adjustably connected to the batten, said devices being maintained taut at all times by the door, and movable means in the path of and actuated by the batten for moving against and shifting the door laterally into the opening during the completion of the movement of said door.

8. The combination with a structure hav-

ing a door opening, of a track above the opening, hangers movably mounted upon the track, a door, flexible connections between the hangers and door, pivoted deflecting  
5 means upon the structure and automatically actuated by the door to swing against one end of said door and shifting said door laterally into the opening.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature 10 in the presence of two witnesses.

SAMUEL B. MARTIN.

Witnesses:

WILLIS HORN,  
F. F. H. POPE.