No. 845,474. PATENTED FEB. 26, 1907.

P. A. MYERS.

DOOR HANGER.

APPLICATION FILED AUG. 4, 1905.

2 SHEETS—SHEET 1.

FIG. 1.

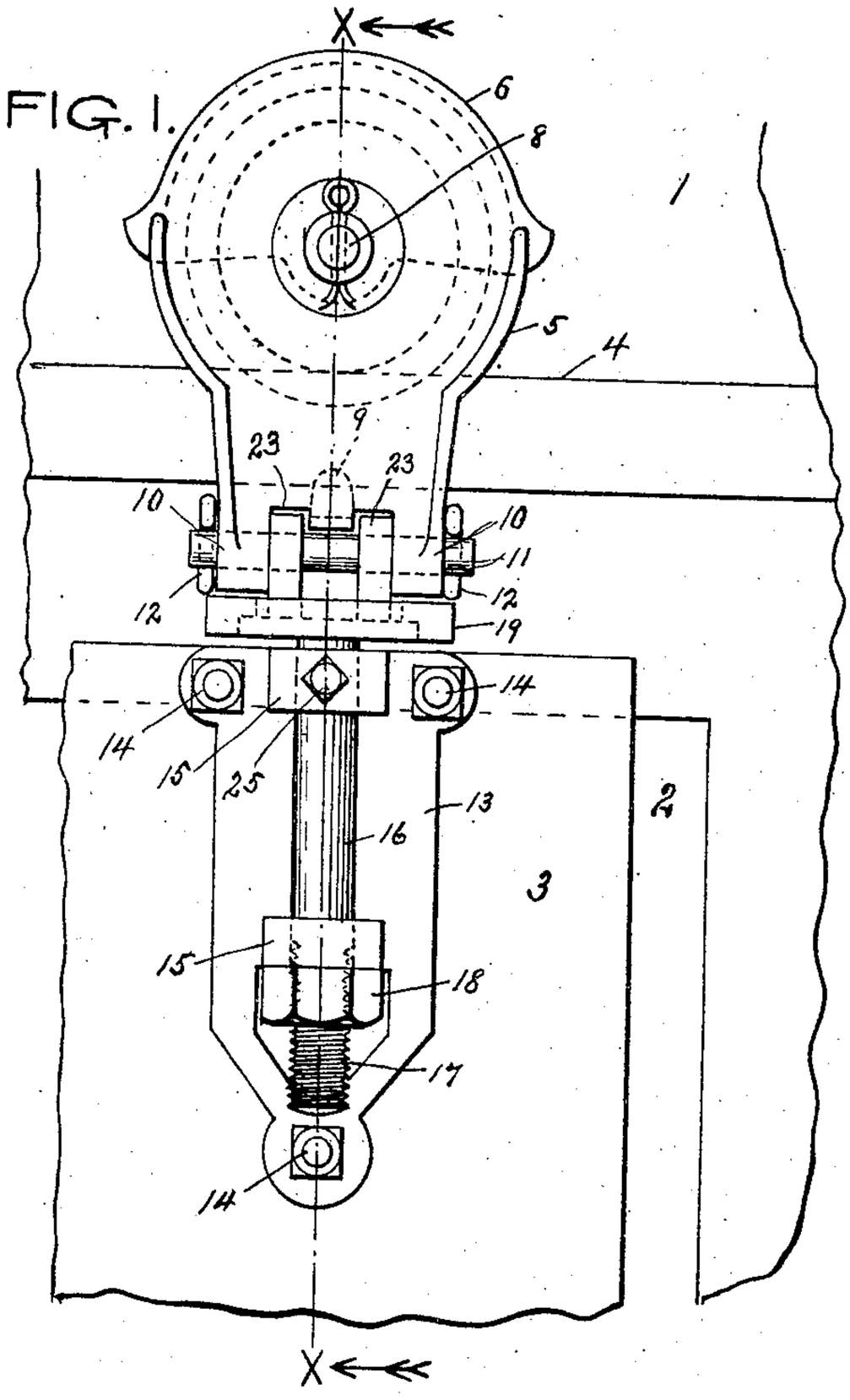


FIG. 2.

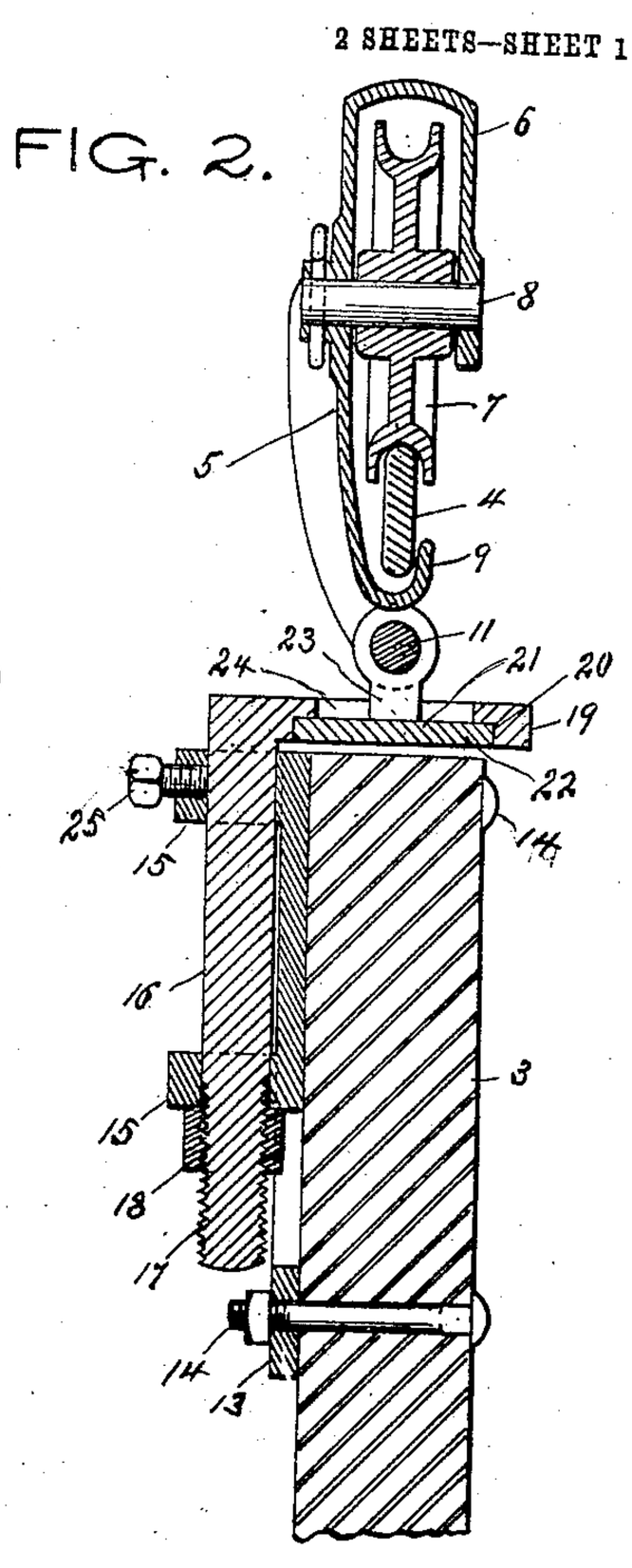


FIG. 3.

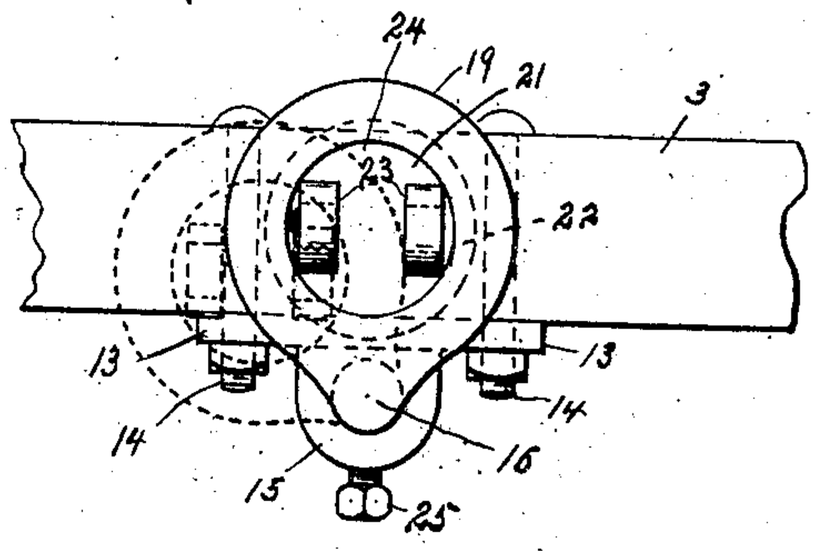
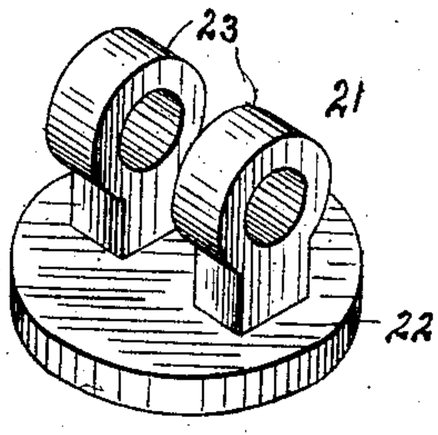


FIG. 4.



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2 SHEETS—SHEET 2.

FIG 6

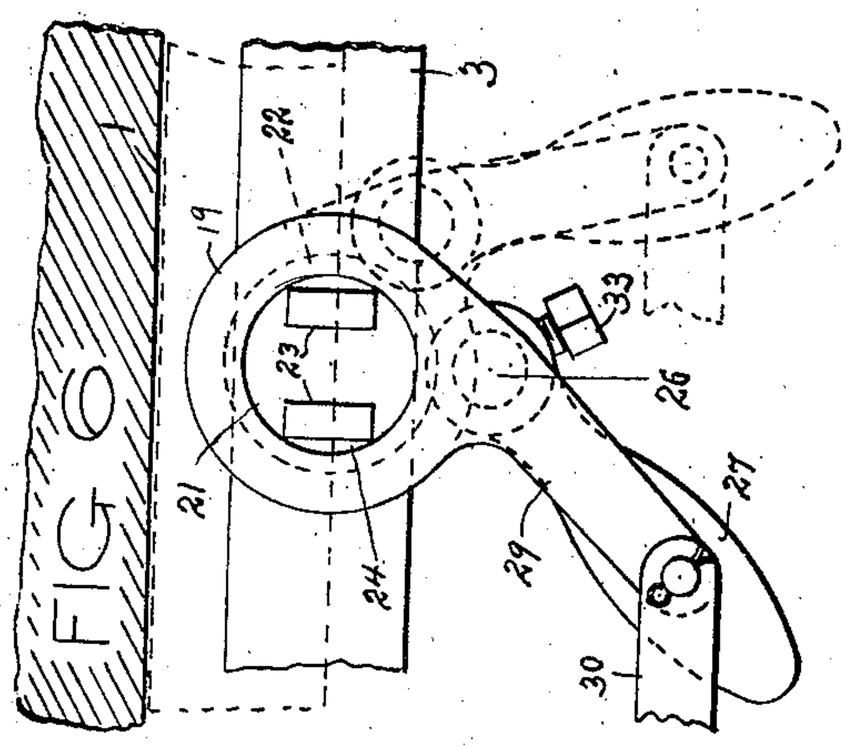


FIG 7

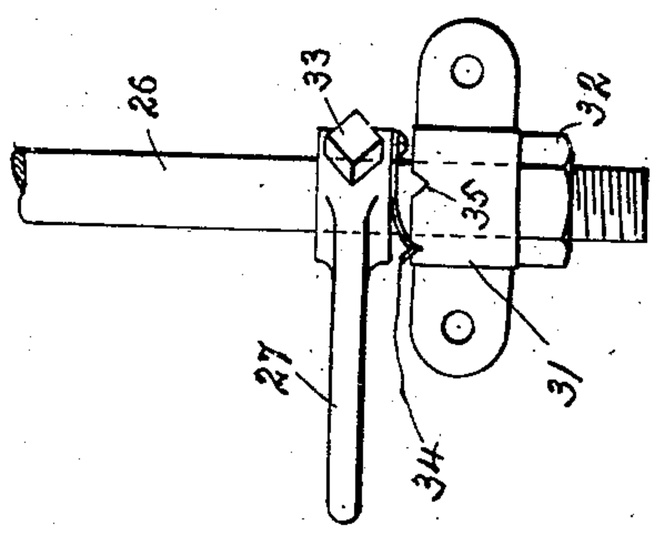
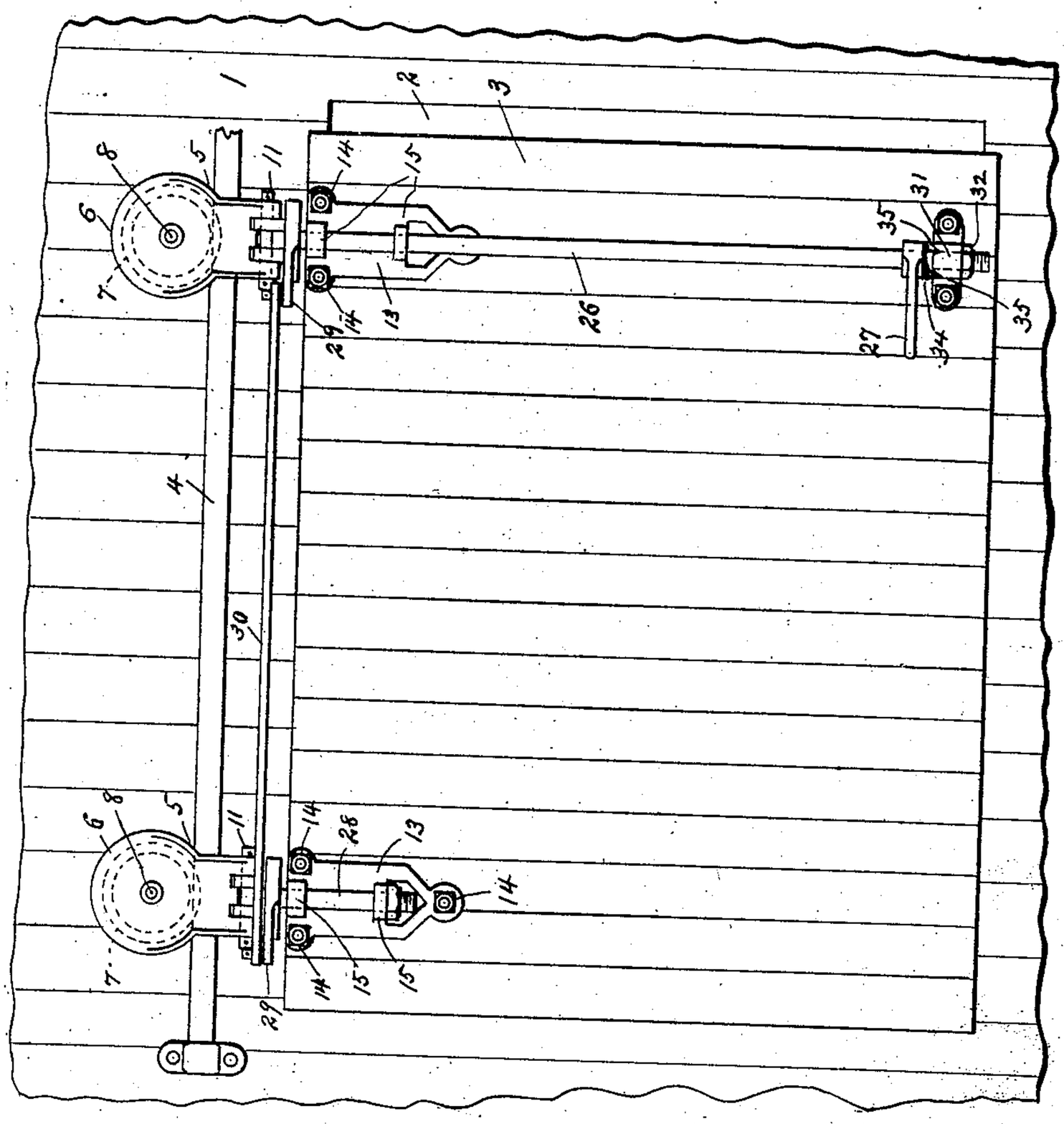


FIG 5



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DOOR-HANGER.

No. 845,474. Specification of Letters Patent. Patented Feb. 26, 1907.

Application filed August 4, 1905. Serial No. 272,628.

To all whom it may concern:

Be it known that I, PHILIP A. MYERS, a citizen of the United States, residing at Ashland, in the county of Ashland and State of Ohio, have invented certain new and useful Improvements in Door-Hangers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to door-hangers, and more particularly to that class known as "sliding barn-door hangers" in which the door is unenclosed and preferably free to swing around an axis extending horizontally in the direction of travel of the door.

It is the object of my present invention to provide a construction whereby the door may be readily adjusted both vertically and laterally, so as to not only adjust or regulate the height of the door relatively to the track on which it travels, but also the position of the door relatively to the building or structure to which it is applied, whereby the lower edge of the door may be brought into proper relation to the floor, sill, or other surface over which it travels, while the body of the door may be maintained at the proper distance from the building or structure which supports it, and, further, to provide a door-hanger of such a construction that it will form a hinge connection on which the door may be swung outwardly.

More specifically, my present invention has for its object the provision of a simple and efficient mechanism for effecting both of these adjustments, a single part serving by rotation around its axis to effect the lateral adjustment and by vertical adjustment in the direction of its axis of rotation to effect the vertical adjustment. The construction is moreover such that all quivering or hesitation of the door arising from lost motion between it and the trolley or wheel supporting frame when the door is pushed by hand is entirely done away with, while the wheel-supporting frame is free to swivel around a vertical axis relatively to the lower portion of the hanger and the door, so as to permit the track-wheels to accommodate themselves to any lateral bends or deflections of the track.

To these ends my invention consists in certain novel features which I will now proceed to describe and will then particularly point out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a structure embodying my invention in one form. Fig. 2 is a sectional view taken on the line $x\,x$ of Fig. 1 and looking in the direction of the arrows. Fig. 3 is a plan view with the upper portion of the hanger or wheel-supporting frame removed. Fig. 4 is a detail perspective view of the coupling member detached. Fig. 5 is an elevation showing a modified embodiment of my invention. Fig. 6 is an enlarged detail plan view similar to Fig. 5, showing the modified construction of one of the hangers with the upper part of the hanger removed, the parts being shown in two different positions in full and dotted lines, respectively; and Fig. 7 is an enlarged detail plan view of a portion of Fig. 5.

In the said drawings, 1 indicates a building or other structure having a doorway 2, and 3 indicates the door, above which there is arranged a track 4. The hanger is shown in its preferred form comprising an upper portion carrying a track-wheel and a lower portion carrying the door, the two portions being connected by a pivot arranged parallel with the track, so that the door is free to swing laterally toward and from the building. In the particular construction shown the upper portion of the hanger comprises a wheel-supporting frame 5, preferably formed at its upper end into a housing 6, in which is mounted a grooved track-wheel 7, rotating on a journal-pin 8. These parts may be of any approved construction. The wheel-supporting frame is provided with a hook-shaped guard or keeper 9, which extends under the track 4 and slightly above the lower edge of the same on opposite sides, as clearly shown in Fig. 2, thus serving in connection with the grooved track-wheel to prevent derailment of the hanger. The wheel-supporting frame terminates at its lower end in pivot-lugs 10, apertured to receive the pivot-pin 11, by which the two portions of the hanger are connected, said pivot-pin lying below and in the vertical plane of the track and being removable, being held in place by any suitable means—as, for instance, by the split pins 12 shown.

The lower portion of the hanger comprises a plate 13, adapted to be secured to the outer face of the door by means of bolts 14. This plate is provided with one or more bearing-

lugs 15, two being shown in the present instance, and constituting a bearing for a rotatable member 16, which is mounted therein. This member 16 is threaded at its lower end, as indicated at 17, and said threaded portion receives a nut 18, which bears against the lower end of the bearing of the rotatable member. In the present instance this is the lower or under surface of the lower lug 15. It will be seen that the contact of this nut with the lower end of the bearing limits the upward motion of the member 16, and since said member 16 is connected to the upper portion of the hanger in the manner hereinafter described rotation of the nut 18 will adjust the door vertically in an obvious manner. It is also obvious that the same vertical adjustment may be obtained by threading the lower lug 15 to receive the threaded end 17 of the member 16.

The member 16 is provided at its upper end with a head 19, located eccentrically with reference thereto and having a bearing 20 therein to receive the coupling member 21. Said member comprises a disk-shaped head 22, fitting in the bearing 20, and upwardly-extending pivot-lugs 23 to receive the pivot-pin 11. The bearing 20 is in the form of a recess in the under side of the head 19, and said head is provided with an aperture 24, through which the pivot-lugs 23 extend. In the present instance I have shown two pivot-lugs 23, fitting, respectively, against the inner faces of the corresponding lugs 10 of the wheel-support and having between them an open space, which receives the guard-hook 9.

It will be seen that by rotating the member 16 the head 19 thereof may be moved to different positions relatively to the central plane of the door, as indicated in full and dotted lines in Fig. 3. Since the coupling member 21 always maintains the same position relatively to the wheel-supporting frame 5 and track 4, it follows that the door may be adjusted laterally toward and from the building by this rotation of the member 16. The said member may be secured in position after adjustment, so as to prevent further rotation thereof, by any suitable means, and for this purpose I have shown a set-screw 25, threaded through the bearing-lug and impinging upon the member 16 therein. In the present instance the set-screw is shown as mounted in the upper lug 15.

It will be seen that I have provided a simple and efficient means for adjusting the door both laterally and vertically by the rotatory and vertical adjustment of a single part or member. It will also be seen that the construction is such that the upper part of the hanger, which is the trolley or wheel supporting frame and track-wheel, must move in unison with the door when this latter is pushed one way or the other, there being no quivering or hesitation of the structure at the beginning of its movement, such as is apt to occur where the lateral adjustment of the door is effected by means of parts rotating around a horizontal axis transverse to the line of travel of the door, as in my prior application, filed July 1, 1905, Serial No. 267,904, unless special provision is made to prevent rocking of the door and trolley upon the transverse axis thus provided. It will also be seen that the wheel-support or trolley is free to adjust itself to any portions of the track which may be deflected from a straight line, said wheel-support being free to turn around the vertical axis of rotation of the disk 22, so as to assume different angular positions relatively to the central vertical plane of the door. In this way the wheels may follow the sinuosities of the track without binding thereon. It will be understood, of course, that two or more of the hangers are used for each door, preferably one near each end of the door, as shown in Fig. 5.

It is obvious that various modifications in the details of construction may be made without departing from the principle of my invention. For instance, it is immaterial how the pivot-lugs are disposed in so far as the number on each of the two portions of the hanger is concerned, and any suitable form of hinged connection between the coupling member 21 and the upper portion of the hanger may be employed. In fact, in the broadest form of my invention this pivotal connection may be dispensed with. Other modifications will readily suggest themselves, and I therefore do not wish to be understood as limiting myself strictly to the precise details of construction hereinbefore described, and shown in the accompanying drawings. I do not, however, broadly claim in the present application the feature which relates to the lateral adjustment of the door by means of a member rotatable around a vertical axis in connection with an eccentric member carried thereby, as the same is claimed by me in another application filed of even date herewith.

In Figs. 5, 6, and 7 I have shown a modified embodiment of my invention, in which the means for laterally adjusting the door is adapted for ready and positive hand manipulation by means of a lever or the like, the rotatable members of the two hangers being connected to move in unison, so that the operator may readily shift the door bodily away from the building when it is desired to move the same along the track and as readily move the door bodily toward the building after it is in position in front of the doorway, so as to bring the door up against the building, and thus tightly close the doorway. This is of material advantage in cold weather or in case

it is desired for any reason to tightly close the opening protected by the door. In this construction one of the rotatable members (indicated by the reference-numeral 26) is provided with a hand-lever, arm, or similar device 27, secured thereon, by means of which said member may be readily rotated. The other rotatable member is indicated by the reference-numeral 28, and each of said members is provided with a projecting arm 29, said arms being connected by a link or connecting-rod 30, pivoted at its ends to the arms 29, so that the rotatable members 26 and 28 will move in unison when the hand-lever 27 is operated. Preferably the member 26, which carries the operating-arm, is extended downward, as shown, so as to bring the operating-lever into convenient reach of the operator, and in this case an additional bearing 31 is provided on the door for the lower end of the member 26, the nut which effects the vertical adjustment being located below said bearing and being indicated by the reference-numeral 32. I have shown the operating-lever as secured to the member 26 by means of a set-screw 33; but any suitable means may be employed for this purpose. It is also desirable to provide means for holding the lever 27 and member 26 in adjusted position, and I have shown for this purpose a spring-detent 34, secured to the lever 27 and adapted to engage with suitable locking-notches 35 in the bearing 31. It will be seen that when the lever 27 is moved to the position shown in full lines of Fig. 6 the door 3 stands clear of the building 1, so that the door may slide freely along the track, and when said lever is moved into the position shown in dotted lines in Fig. 6 the door is moved up against the building, as also indicated in dotted lines in said figure, and may be thus caused to tightly close the doorway.

Thus it will be seen that in either of the devices shown I have provided a hanger combining the vertical and lateral adjustments and the horizontal swinging movement of the door, thereby allowing the door to be adjusted to regulate the position of the same relatively to the track on which it travels and also to regulate its position relatively to the building on which it is mounted, both of these adjustments being accomplished without interfering with the outwardly-swinging movement of the door.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a track and a door, of a hanger comprising an upper portion, a track-wheel mounted therein, a lower portion secured to the door, and an intermediate member rotatable around and adjustable along a vertical axis in one of said portions and means for connecting the same to the adjacent edge of the other portion, said member serving to adjust the door laterally by its rotation and vertically by its longitudinal adjustment, substantially as described.

2. The combination, with a track and a door, of a hanger comprising an upper portion, a track-wheel mounted therein, a lower portion secured to the door, an intermediate member rotatable around and adjustable along a vertical axis in one of said portions and means for pivotally connecting the same to the other portion on an axis parallel to said track, said member serving to adjust the door laterally by its rotation and vertically by its longitudinal adjustment, substantially as described.

3. The combination, with a track and a door, of a hanger comprising a wheel-supporting frame, a track-wheel mounted therein, a plate secured to the door and provided with a vertical bearing, and an intermediate member rotatable and vertically adjustable in said bearing and means for connecting the same to the lower edge of the wheel-supporting frame, said member serving to adjust the door laterally by its rotation and vertically by its vertical adjustment in said bearing, substantially as described.

4. The combination, with a track and a door, of a hanger comprising a wheel-supporting frame, a track-wheel mounted therein, a plate secured to the door, a vertical bearing carried thereby, an intermediate member movable and vertically adjustable in said bearing, and means for pivotally connecting the same to the wheel-supporting frame on an axis parallel to said track, said member serving to adjust the door laterally by its rotation and vertically by its vertical adjustment, substantially as described.

5. The combination, with a track and a door, of a hanger comprising an upper portion, a track-wheel mounted therein, a lower portion secured to the door, and an intermediate member movable around and adjustable along a vertical axis in one of said portions, a part carried by said intermediate member and arranged eccentrically thereto, forming the connection between said movable member and the other portion of the hanger, with which other portion of the hanger it maintains fixed relations with respect to their distance from the vertical plane of the track, substantially as described.

6. The combination, with a track and a door, of a hanger comprising an upper portion, a track-wheel mounted therein, a lower portion secured to the door, and an intermediate member rotatable around and adjustable along a vertical axis in one of said portions, a part carried by said intermediate member and arranged eccentrically thereto forming the connection between said rotatable member and the other portion of the

hanger, and means for pivotally connecting the same to the other portion on an axis parallel with the track, substantially as described.

7. The combination, with a track and a door, of a hanger comprising an upper portion, a track-wheel mounted therein, a lower portion secured to the door, an intermediate member rotatable around a vertical axis in one of said portions, an eccentrically-disposed member carried by said intermediate member and having a bearing therein, a coupling member pivotally mounted in said bearing, the pivotal axis being vertical, and means for connecting the same to the other portion of the hanger, substantially as described.

8. The combination, with a track and a door, of a hanger comprising an upper portion, a track-wheel mounted therein, a lower portion secured to the door, an intermediate member rotatable around a vertical axis in one of said portions, a head located eccentrically thereto and having a bearing therein, a coupling member rotatably mounted in said bearing, the axis being vertical, and means for pivotally connecting the same to the other portion of the hanger around an axis parallel to the track, substantially as described.

9. The combination, with a track and a door, of a hanger comprising a wheel-supporting frame, a track-wheel mounted therein, a plate secured to the door, a vertical bearing on the same, a member rotatably mounted in said bearing, an eccentrically-disposed head carried thereby and having a bearing located therein and eccentric to the first-mentioned bearing, a coupling member mounted in said last-mentioned bearing, and means for connecting the same with the wheel-supporting frame, substantially as described.

10. The combination, with a track and a door, of a hanger comprising a wheel-supporting frame, a track-wheel mounted therein, a plate secured to the door, a vertical bearing carried by said plate, a member rotatably mounted in said bearing, a head located eccentrically thereto and having a second bearing located therein and eccentric to the first-mentioned bearing, a coupling member mounted in said last-mentioned bearing, and means for pivotally connecting said coupling member to the wheel-supporting frame around an axis parallel with the track, substantially as described.

11. The combination, with a track and a door, of a hanger comprising a track-wheel, a plate secured to the door, a vertical bearing carried by said plate, a member rotatably mounted in said bearing, and a head located eccentrically thereto, a coupling member pivotally mounted in said head, the pivotal axis being vertical, interfitting bearing-lugs formed on said coupling member and wheel-frame, and a removable pivot-pin passing through said bearing-lugs parallel with the track, substantially as described.

12. The combination, with a track and a door, of a hanger comprising a wheel-supporting frame, parallel pivot-lugs and an intermediate guard-hook, a track-wheel mounted therein, a plate secured to the door, a vertical bearing carried by said plate, a member rotatably mounted in said bearing, a head located eccentrically thereto, a coupling member pivoted in said head, the pivotal axis being vertical, pivot-lugs on said coupling member adapted to bear against the pivot-lugs of the wheel-supporting frame and separated to receive the guard-hook between them, and a removable pivot-pin passing through said pivot-lugs parallel with the track, substantially as described.

13. The combination, with a track and a door, of a hanger comprising a wheel-supporting frame, a track-wheel, a plate secured to the door, a vertical bearing carried by said plate, a member rotatably mounted in said bearing, a head located eccentrically thereto and having a bearing-recess in the under side of said head, and an aperture of less diameter above the same, a coupling member comprising a disk fitting in the bearing-recess of the head, and having a part extending through the aperture of said head, and means for connecting the said coupling member to the wheel-supporting frame, substantially as described.

14. The combination, with a track and a door, of a hanger comprising a wheel-supporting frame, a track-wheel, a plate secured to the door, a vertical bearing carried by said plate, an intermediate member mounted in said bearing, a threaded portion on said member extending below said bearing, a nut mounted on said threaded portion, a set-screw mounted in the bearing to lock the intermediate member against rotation, a head located eccentrically to said intermediate member and having a bearing therein, a coupling member mounted in the last-mentioned bearing, and means for connecting said coupling member to the wheel-supporting frame, substantially as described.

15. The combination, with a track and a door, of a hanger comprising a wheel-supporting frame, a track-wheel, a plate secured to the door, a vertical bearing carried by said plate, an intermediate member mounted in said bearing, a threaded portion on said member extending below said bearing, a nut mounted on said threaded portion, a set-screw mounted in the bearing to lock the intermediate member against rotation, a head located eccentrically to said intermediate portion and having a bearing therein, a coupling member mounted in the eccentric-head bearing, and means for separably connecting said coupling member to said wheel-support-

ing frame around a pivotal axis parallel with the track, substantially as described.

16. The combination, with a track and a door, of a hanger comprising a wheel-supporting frame, a track-wheel, a plate secured to the door, a vertical bearing carried by said plate, an intermediate member mounted in said bearing, a threaded portion on said member extending below said bearing, a nut mounted on said threaded portion to adjust said intermediate member vertically, means for locking said intermediate member against rotation, a head carried by said intermediate member and located eccentrically thereto and having a bearing therein, a coupling member mounted in the eccentric-head bearing, and means for connecting the same to the wheel-supporting frame, substantially as described.

17. The combination, with a track and a door, of hangers for said door, each comprising an upper portion and a track-wheel mounted therein, a lower portion secured to the door, an intermediate member rotatable around a vertical axis in the lower portion, a head carried by said intermediate member and located eccentrically thereto and having a bearing therein, a coupling member mounted in said bearing, the axis being vertical, and means for connecting the same to the upper portion of the hanger, means for so connecting said intermediate members as to cause the same to rotate in unison, and hand-operated means for rotating one of said intermediate members, substantially as described.

18. The combination, with a track and a door, of hangers for said door, each comprising an upper portion and a track-wheel mounted therein, a lower portion secured to the door, an intermediate member rotatable around the vertical axis of the lower portion, a head carried thereby and located eccentrically thereto and having a bearing therein, and a coupling member rotatably mounted in said bearing, the axis being vertical, means for connecting the same to the upper portion of the hanger, means for so connecting said intermediate members as to cause the same to rotate in unison, hand-operated means for rotating one of said intermediate members, and means for holding the same in adjusted position, substantially as described.

19. A door-hanger of the class described comprising a plate for attachment to a door, a hanger member connected to said plate for vertical and axial adjustment, means coacting with said plate and member to adjust the latter and a wheel-housing eccentrically and pivotally connected to said adjustable member on a horizontal axis.

20. A door-hanger comprising a sheave-supporting hanger-frame and a door-supporting strap and means connecting said frame and strap, said means adapted to turn on vertical and horizontal axes.

In testimony whereof I affix my signature in presence of two witnesses.

PHILIP A. MYERS.

Witnesses:
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