

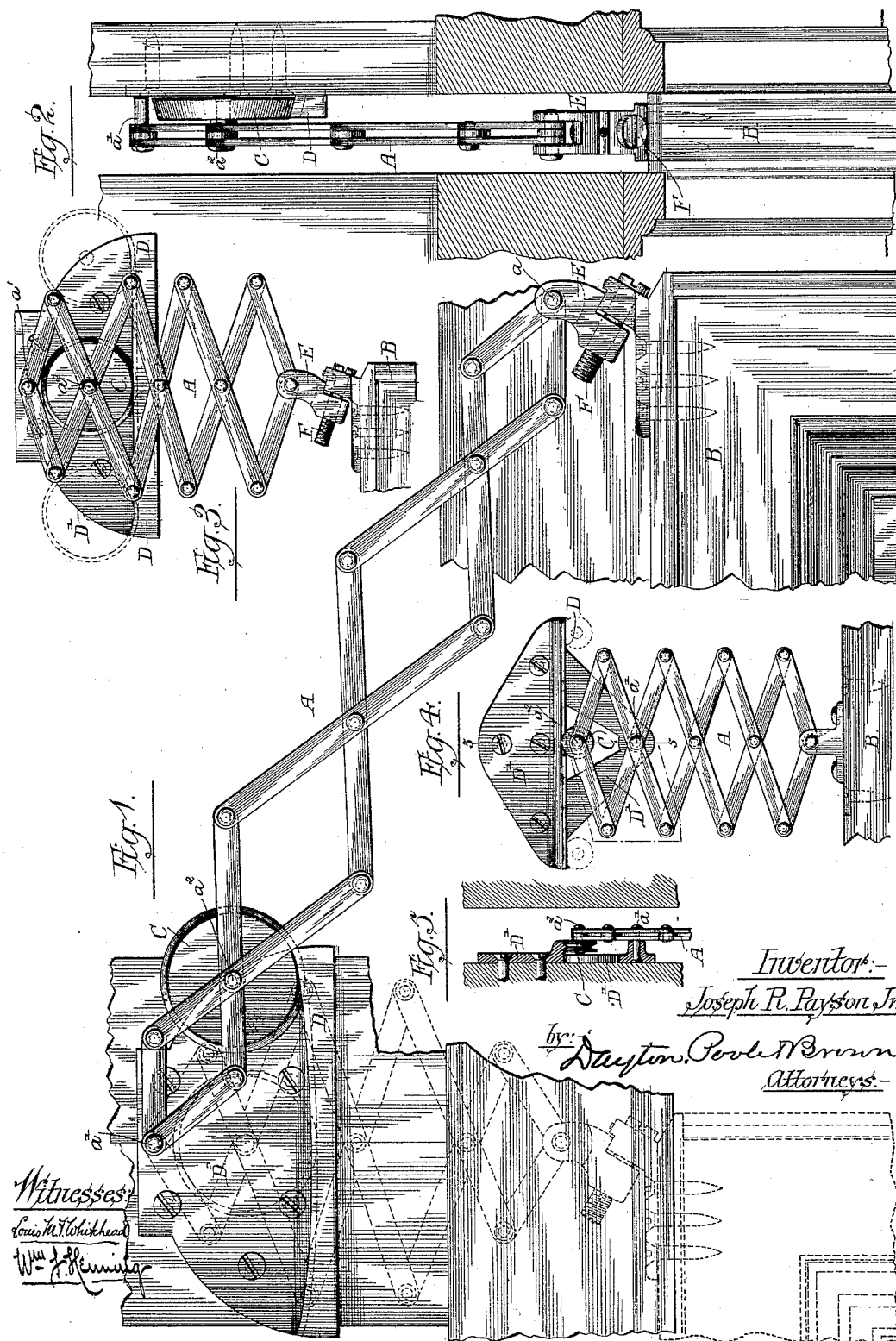
(No Model.)

2 Sheets—Sheet 1.

J. R. PAYSON, Jr.
SLIDING DOOR SUPPORT.

No. 426,314.

Patented Apr. 22, 1890.



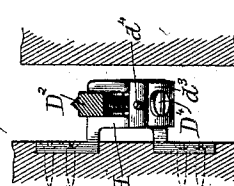
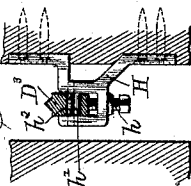
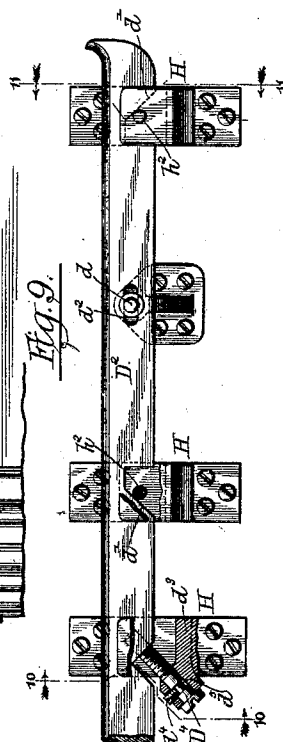
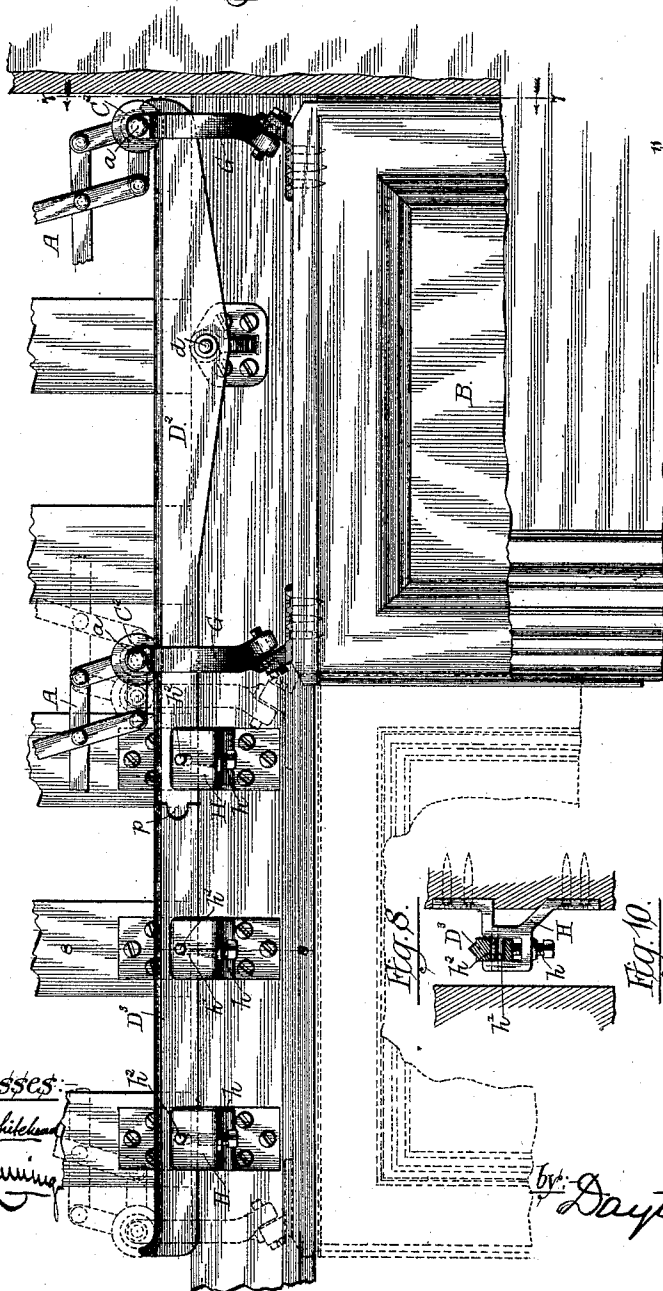
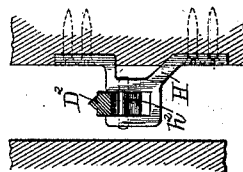
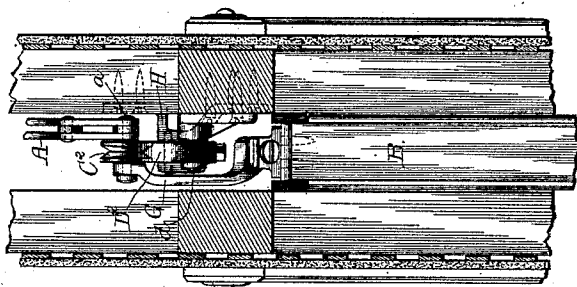
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2 Sheets—Sheet 2.

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SLIDING DOOR SUPPORT.

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Witnesses:

Yours M. T. Whitehead

Wm. L. Harris

Inventor:-

Joseph R. Payson, Jr.

by Dayton, Poole & Brown

Attorneys:-

UNITED STATES PATENT OFFICE.

JOSEPH R. PAYSON, JR., OF CHICAGO, ILLINOIS.

SLIDING-DOOR SUPPORT.

SPECIFICATION forming part of Letters Patent No. 426,314, dated April 22, 1890.

Application filed October 1, 1889. Serial No. 325,635. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH R. PAYSON, JR., of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sliding-Door Supports; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to devices concerned in the support of sliding doors; and it has among its objects, first, to provide a hanger proper adapted to render the movement of the door extremely easy, and, secondly, to provide a novel adjustment of a track on which run the wheels concerned in supporting a door.

Referring to the accompanying drawings, Figure 1 is a side elevation of a hanger containing my improvement as it appears when the door is thrown to one extreme of its movement. Fig. 2 is a view of the hanger as seen when viewed in the plane of the door. Fig. 3 illustrates the hanger when the door is in mid-position or half-open. Fig. 4 is a similar view to Fig. 3 of the hanger, having modified construction. Fig. 5 is a vertical section in the indirect line 5 5 of Fig. 4. Fig. 6 shows in side elevation my improvement in the adjustable rail of sliding-door-hanging devices, the housing for the door and rail being broken away. Fig. 7 is a vertical section in the line 7 7 of Fig. 6, looking in the direction of the arrow applied to said line. Fig. 8 is a vertical section of the track-rail in the line 8 8 of Fig. 6, showing the adjustable supporting devices for upholding the rail in side elevation. Fig. 9 illustrates a modification of the adjustable rail seen in Fig. 6. Fig. 10 is a vertical section of the rail in the indirect line 10 10 of Fig. 9, the supporting-bracket being shown in side elevation. Fig. 11 is a vertical section of the rail in the indirect line 11 11 of Fig. 9, the bracket being shown in side elevation.

First describing the hanger proper, A represents an extensible arm, consisting of a lazy-tongs composed of metal bars pivoted to each other in the manner characteristic of this device. As shown in Fig. 1, this lazy-tongs

has its middle pivot *a* at one end connected with the door B, the middle pivot *a'* at the opposite end fixed in the overhead pocket of the door-frame, and an intermediate pivot *a*², provided with a wheel C, which runs on a fixed track D, also in the overhead pocket. For heavy doors two of these lazy-tongs devices are similarly supported and connected with each door at its opposite upper corners or otherwise at a suitable distance from each other. Arranged in the position shown in either the fully-opened or fully-closed position of the door thus suspended the lazy-tongs A will have an inclined position in one direction or the other, as illustrated in Fig. 1, and when the door is at its middle position said lazy-tongs will have the vertical position illustrated by dotted lines in the same figure.

Theoretically speaking, the track D, which extends an equal distance on both sides of a vertical line passing through the fixed pivot *a'*, should be perfectly horizontal throughout its length, in order to give motion to the pivot *a* and to the door in a horizontal line, and the structure may as a possibility be made of sufficient rigidity and with sufficiently close pivot-joints to allow of the track D being so or substantially so made. In practice, however, the lazy-tongs structure in being extended to one side or the other of its vertical position will bend to some degree in supporting the weight of the door, and some degree of freedom will ordinarily be provided in the pivotal joints of the tongs. From these conditions results a tendency of the door to settle somewhat in its extreme positions, to obviate which it is desirable to make the track D somewhat curved or concaved, as shown in Fig. 1, to give a substantially horizontal line of motion to the pivots *a* and to the door.

In Figs. 4 and 5 the extreme upper middle pivot carries the wheel and an intermediate pivot is fixed. This reverses the position of the track D and the direction of bearing against it, said track in this modification being placed over the wheel instead of below it.

For purposes of adjustment the pivot *a* may connect the lazy-tongs with a lug or bracket E, which is threaded to admit an inclined screw F, suitably supported by the door, as shown, or otherwise, so that by operating the screw F the door B may be low-

ered or raised with reference to the pivotal point a .

In the construction shown the track D and the fixed support for the pivot a' are made parts of a single casting D' , adapted to be secured by screws or otherwise to the side wall of the overhead pocket. This integral construction of the pivot-support and track of course insures permanent and proper relation of the pivot to the track. The track is shown as having a transversely-inclined surface, of which the outer part is the higher. The wheel C is beveled to fit this track, so that under the weight of the door it keeps its place in the track, and, in connection with the adjacent pivot of the hanger, tends to keep the door in a fixed plane.

In connection with doors of considerable weight a track of length equal to or exceeding that of the movement of the door, together with a supporting wheel or wheels directly connected with the door and running on said track, will be desirable as an aid in sustaining said door. Such a track is shown at D^2 in Figs. 6, 7, and 8, in which two wheels C^2 are connected with the door by brackets G and run upon said track D^2 . This figure also shows two lazy-tongs A, the lower extreme pivots of which are prolongations of the pivots of the wheels C^2 , said lazy-tongs thus exerting their supporting force through the brackets G. Obviously the lazy-tongs may be otherwise connected with the door, and it is also manifest that a single lazy-tongs may be employed in connection with two wheels C^2 , as the latter will hold the door in a vertical position, while a single lazy-tongs connected with the middle of the door will contribute its support. On the other hand, it is equally manifest that in connection with two lazy-tongs connected with the door at points suitably distant from each other a single wheel C^2 only between said points may be employed.

The lazy-tongs A A, when employed in connection with a wheel or wheels C^2 and a track D^2 , will of course be connected and provided with wheels in their upper parts, in the manner shown in Fig. 1 or 4, and the track D^2 will be so adjusted with respect to its position as to aid the lazy-tongs in upholding the door. This track D^2 as a folding-door support, whether used in connection with the lazy-tongs or only with wheels C^2 , has a novel mode of adjustment. For this purpose it is mounted on a pivot d , located at about its middle point, but desirably somewhat nearer the inner or rear end of the track, which is that portion of the latter over the rear or innermost part of the door-housing. Said track being located over the housing which incloses the restricted or open door, the outer end of the track reaches to or near the door-opening, where it is subject to the action of any suitable device for raising or lowering its adjacent end. The adjusting device illustrated for this purpose consists of

a bracket H, provided with an upwardly-open recess, in which the track-rail rests, and a screw h , threaded through the bottom of the bracket, so as to bear at its upper end against the under surface of the track-rail.

When the pivot d is beyond the middle of the door when open, the weight of the door in all of its positions will hold the track in contact with the adjusting-screw h , so that such simple bearing of the adjusting-screw against the bottom of the track-rail will serve for the adjustment proposed. If the pivot d be otherwise placed, the adjusting-screw should be otherwise connected with the rail in an obvious manner. The separate extension D^3 of the rail D^2 , occupying the pocket over the doorway, is also vertically adjustable, so as to bring and keep it in line with the rail D^2 . Its end adjacent to the rail D^2 is desirably notched to receive a projection p of the latter, as shown, to preserve continuity of their upper surfaces, and the opposite end of said track-extension is sustained by one or more brackets H, having adjusting-screws h , as illustrated.

The extension-rail D^3 is shown provided with a vertical slot h' , through which passes the pin h^2 , the ends of which are fixed in the bracket at opposite sides of the rail-extension as a suitable means for preserving the lengthwise position of said extension.

In Figs. 9, 10, and 11 the rocking adjustment of the rail D^3 upon its pivot d is accomplished by means of inclined surfaces d' on the under side of the rail, which bear upon the pins h^2 , coupled with a slot d^2 in the rail for the passage of the pivot d and an inclined screw d^4 , located in a position accessible from the doorway. This screw rotates in the fixed support d^3 , but is held from longitudinal motion therein by a screw or pin d^5 entering the annular groove d^5 in the screw, the threaded end of the screw taking into a tapped hole in the rail. The inclination of the screw d^4 is substantially that of the inclined surfaces d' , and by its rotation one way or the other slides the rail lengthwise, and by the contact of the latter at its inclined surfaces with the pin or pins h^2 causes said rail to rock on its pivot to the desired position.

The wheel C is of course only an anti-friction form of bearing for the laterally-movable point of the lazy-tongs, upon which said wheel is mounted, and the track D is only one form of guiding-support for said pivot. It is manifest, therefore, that the wheel may be dispensed with and other forms of guides than the track may be used without departure from my invention.

It is also manifest that my invention may be applied to the lower edge or margin of a door and to the adjacent portion of a frame therefor, as well as to the upper portion of the door and frame, as illustrated in the drawings.

I claim as my invention—

1. A sliding-door hanger consisting of an

extensible arm fixed at one point to the top of a door and at another point to the top of the door-frame and a guide for a moving part of the said extensible arm.

5 2. A sliding-door hanger adapted to be attached to the upper part of a door and to the door-frame, said hanger consisting of an extensible arm, which is free to move on either side of a vertical line passing through the point of its attachment to the door-frame, and a guide for a movable point of said extensible arm.

15 3. A sliding-door hanger consisting, essentially, of a lazy-tongs having a fixed pivot in its upper part and a support for one or more of its laterally-movable pivots above its connection with the door.

20 4. In a sliding-door hanger, the combination of a lazy-tongs having a fixed pivot and a bearing-wheel at its upper part and a track for said wheel, substantially as described.

25 5. In combination with a door, a lazy-tongs pivoted to the door and to a fixed point above the door, a wheel pivoted to a joint in the central line of joints of the lazy-tongs, and a track for the wheel, substantially as described.

30 6. The combination of a door provided with one or more supporting-wheels, a track for said wheel or wheels, a lazy-tongs pivoted at its lower end to the door and at its upper end

to a fixed support, a wheel pivoted to the lazy-tongs, and a track for the last-mentioned wheel.

7. The combination, with a wheel at the upper part of a sliding door and a track for said wheel, of a lazy-tongs pivoted at its lower end to the axis of the wheel and at its upper part to a fixed support, a wheel pivoted to the lazy-tongs, and a track for the last-mentioned wheel.

8. An adjustable overhead track for a sliding door, supported above the door-housing on a pivot at a point between its ends, and an adjusting device for rocking the track upon its pivot, located at the end of said track adjacent to the doorway.

9. The rocking and longitudinally-movable overhead track for a sliding door, provided with one or more inclined surfaces on its under side, combined with a support or supports upon which said inclined surface or surfaces rest and means for giving lengthwise motion to the track.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

JOSEPH R. PAYSON, JR.

Witnesses:

M. E. DAYTON,

C. CLARENCE POOLE.