No. 619,794. Patented Feb. 21, 1899.

J. SCHLUTTER.

SLIDING DOOR.

(Application filed Nov. 4, 1897.)

(No Model.) 2 Sheets—Sheet 1.

Fig. I.

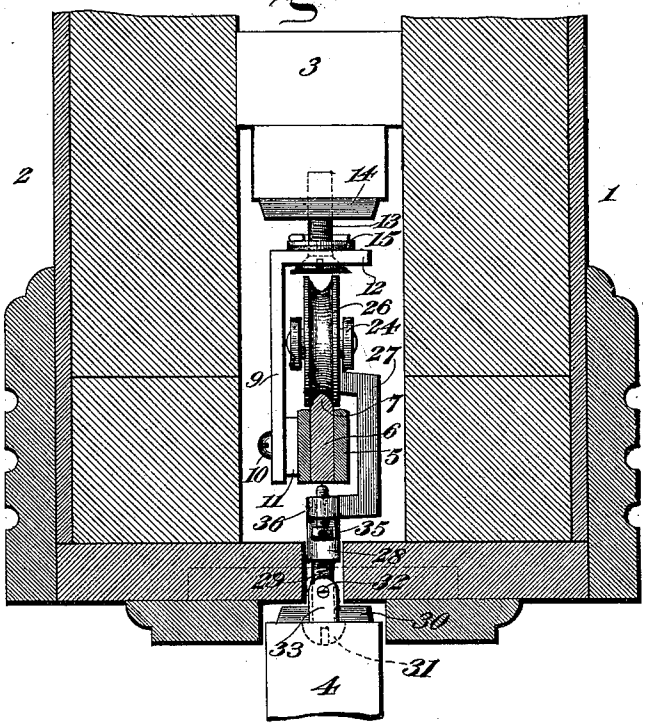
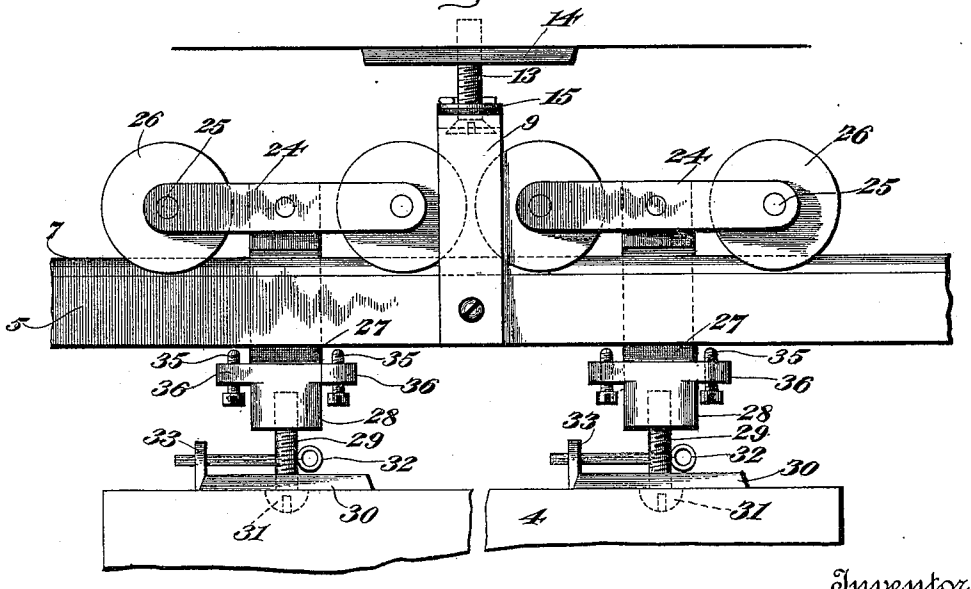


Fig. II.



Witnesses
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Fig. III.

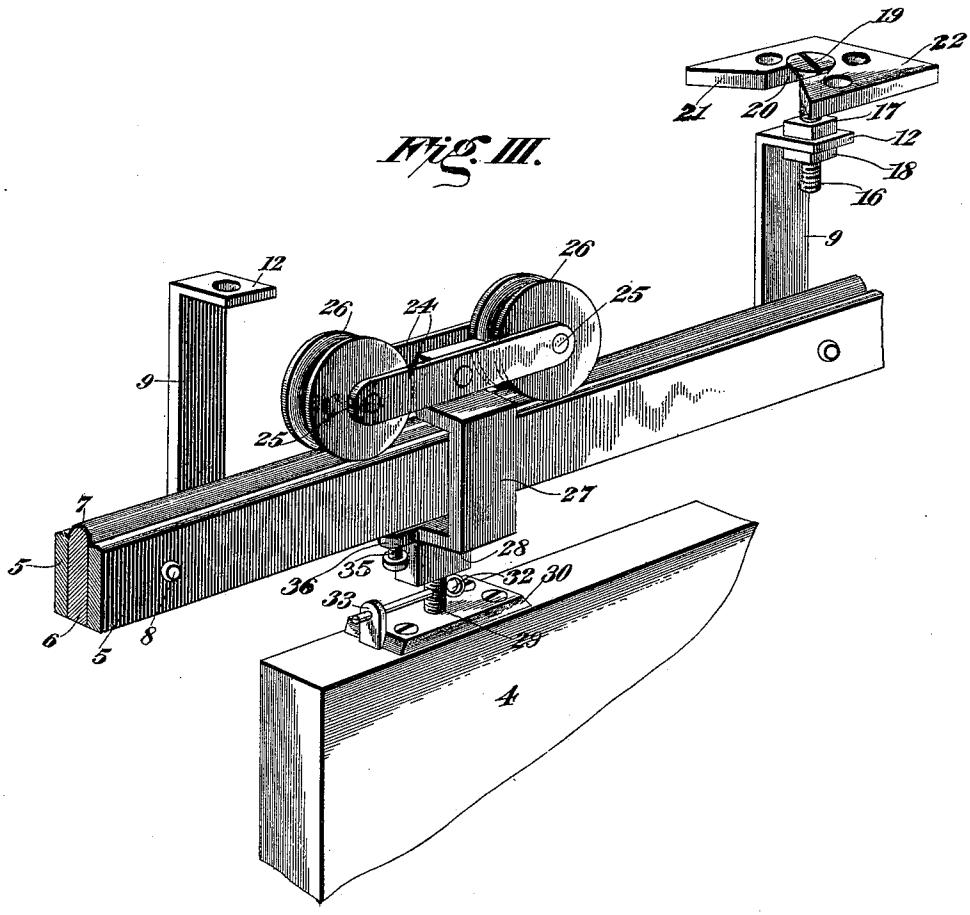
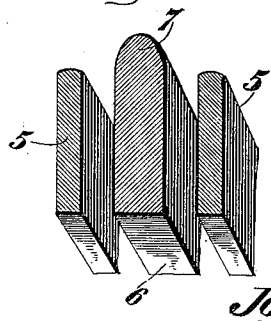


Fig. IV.



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UNITED STATES PATENT OFFICE.

JOHN SCHLUTTER, OF BALTIMORE, MARYLAND.

SLIDING DOOR.

SPECIFICATION forming part of Letters Patent No. 619,794, dated February 21, 1899.

Application filed November 4, 1897. Serial No. 657,338. (No model.)

To all whom it may concern:

Be it known that I, JOHN SCHLUTTER, of Baltimore, State of Maryland, have invented certain new and useful Improvements in Sliding Doors, of which the following is a complete specification, reference being had to the accompanying drawings.

The object of my invention is to produce improved mechanism for suspending sliding doors whereby the necessary adjustments of the mechanism are facilitated and the operation is rendered noiseless.

In the accompanying drawings, Figure I is a sectional view of a portion of a door-frame and rail with door-suspending mechanism upon the rail. Fig. II is a side elevation of the same with the door-frame eliminated and showing two supporting-trolleys in juxtaposition. Fig. III is a perspective view of my rail with one trolley in position and a fragment of a door attached thereto. Fig. IV is a perspective view of a section of my composite rail, the parts being shown detached.

Referring to the figures on the drawings, 1 and 2 indicate the two side pieces of the over-head portion of a door-frame, that are separated to accommodate the door-supporting mechanism and to admit the supporting member 3.

4 indicates an example of a sliding door.

5 indicates the lateral members, and 6 the intermediate member, of my composite rail. The lateral members are preferably narrower than the intermediate member and are made of metal, while the intermediate member is made of wood or other suitable material and is provided with a preferably convex tread 7, that is designed to accommodate the grooved wheels of a trolley to support them out of contact with the lateral sections 5 and enable them to travel noiselessly upon the rail. The lateral and intermediate sections of my composite rail are rigidly united by binding members—for example, rivets 8.

9 indicates rail-hangers which are secured, as by screws 10, against spacing-blocks 11 to one side of the rail. At a suitable distance above the rail the hangers are provided with transverse extensions 12, by which the hangers are adapted to be secured to the supporting member 3.

In order to afford means for securing the requisite adjustment of the rail after it is hung upon the supporting member by aid of the hangers 9, I prefer to employ adjustable mechanism consisting, preferably, of screws 13, working through end plates 14, fastened to the under part of the supporting member 3.

The hangers 9 are loosely supported upon the heads of the screws 13, so that the rail may be swung aside to permit access to the kerf in the screw-head, as required. The screws are preferably loosely secured to the extensions 12 of the hangers, as by pin-retained washers 15.

The screw connection above described for securing the hangers to the supporting member 3 is such as is readily accessible after the door is hung and inclosed. In order, however, to permit requisite readjustment of the rail without the necessity of opening the framework which incloses the door-supporting mechanism, I prefer, in addition to the adjustable mechanism above described and in connection therewith, to employ for the concealed or inaccessible supports of the hangers 9 a bolt 16, that is adjustably secured to terminal hanger extension 12, as by nuts 17 and 18, screwing upon the bolt upon opposite sides of the extension 12. The bolt is provided, preferably, with a flat head 19 and is adapted to enter a slot 20, provided with divergent jaws 21 in a supporting-plate 22, that is in use secured to the supporting member 3 similarly to the plates 14, above referred to.

By means of the mechanism above described the rail may be detached from the supporting member 3 and withdrawn from the space inclosed by the side pieces 1 and 2. Thereupon when the nuts 17 and 18 are properly adjusted the rail is restored to position by introducing it, with its hangers, into the space between the side pieces 1 and 2, and its terminal hanger is fastened in place by introducing the head 19 of the bolt 16 into the slot 20 of the plate 22. Afterward the screw or screws 13 are employed to properly adjust the rail at required inclination with respect to the preadjustment of the nuts 17 and 18 upon the bolt 16.

24 indicates a suitable trolley-frame that carries at its opposite ends, upon axles 25, grooved trolley-wheels 26, which travel upon

the tread 7 of the rail. Each trolley-frame 24 carries a door-hanger 27, whose body portion is deflected around the rail in order to bring their pendent ends 28 underneath the rail in vertical alinement with the trolley 24 above the rail.

The door-hangers support in suitable manner the door 4. The means which I prefer to employ for that purpose consists of screws 29, loosely secured to the upper edge of the door, as by means of plates 30, which secure the heads 31 of the screws within suitable recesses provided for them in the body of the door.

The screws 29 enter suitable apertures in the pendent ends 28 of the door-hangers 27.

In order to afford means for conveniently adjusting the door after it is hung, I prefer to provide in each screw 29 a pin or cotter-key 32, which passes through a diametrical aperture provided for it in the screw and which may be detachably secured in alinement with the door, as by means of an apertured lug 33, projecting from the plate 30. The pin 32 may be employed as a lever to rotate its screw 29, and thereby to raise or lower that portion of the door to which the screw is secured. I prefer to employ a pin in the shape of a cotter-key, because the latter affords convenient means for securing the pin when the adjustment is perfected within the aperture of the lug 33.

In connection with the trolleys above described and their respective pendent door-hangers I prefer to employ rail-spacing mechanism whose office is to prevent the trolley-wheels from jumping the tracks without impeding their proper travel upon the tread of the rail. Such mechanism may consist, for example, of screws 35, working in lugs 36, provided for them upon the pendant ends 28 of the door-hangers.

In practice the screws may be retracted so as to mount the trolley upon the rail and may then be advanced toward the rail sufficiently to prevent the disengagement therefrom of the trolleys, but without coming into contact with the rail and so impeding the movement of the trolley thereon.

I am aware that metallic rails for sliding doors have been heretofore employed, and also that wooden rails have been used; but the metallic rails are noisy in operation and the wooden rails must be made excessively large in order to afford requisite strength of support and are also liable to warp and twist in use. My composite rail, on the contrary, possesses the advantages of both without the disadvantages of either, being strong, light, durable, and rigid, and in operation noiseless.

What I claim is—

1. A composite rail for a sliding door, consisting of an intermediate tread member extending from top to bottom of the rail, lateral metallic members upon opposite sides thereof, and binding members extending through the lateral and tread members for uniting the parts together, substantially as set forth.

2. A composite rail for a sliding door, consisting of an intermediate tread member, and lateral members secured thereto, the tread member extending from top to bottom of the rail, and provided with a convex tread projecting above the lateral members, substantially as set forth.

3. The combination with a supporting member, a plate secured thereto, a rail, screws working in the plates, and means for pendulously supporting the rail upon the screw, substantially as set forth.

4. The combination with plates adapted to be secured to a supporting member, of screws working in the plates, a rail, and means for pendulously supporting the rail upon the screw-heads, substantially as set forth.

5. The combination with a rail and adjustable bolt connected therewith, of a slotted plate adapted to be secured to a supporting member, and to receive within its slot the head of the bolt, substantially as set forth.

6. The combination with a rail, of a trolley-frame adapted to travel thereon, and rail-spacing mechanism upon the trolley-frame adapted to prevent accidental displacement of the trolley-frame from the rail, substantially as set forth.

7. The combination with a rail and trolley-frame adapted to travel thereon, of a pendent door-hanger upon the trolley-frame, and rail-spacing mechanism consisting of an adjustable member upon the hanger working to and from the trolley-frame and opposite the rail, substantially as set forth.

8. The combination with a trolley-frame and hanger, of a screw working in the hanger, a plate through which the screw passes adapted to be secured to a door, and a lever upon the screw for operating it, substantially as set forth.

9. The combination with a trolley-frame and hanger, of a screw working in the hanger, a plate through which the screw passes adapted to be secured to a door, and a lever located between the plate and the hanger for operating the screw, substantially as set forth.

10. The combination with a trolley-frame and hanger, of a screw working in the hanger, a plate through which the screw passes adapted to be secured to a door, a lever, and means for fixing the adjustment of the screw, substantially as set forth.

In testimony of all which I have hereunto subscribed my name.

JOHN SCHLUTTER.

Witnesses:

THOS. KELL BRADFORD,

FRANK SCHLUTTER.