

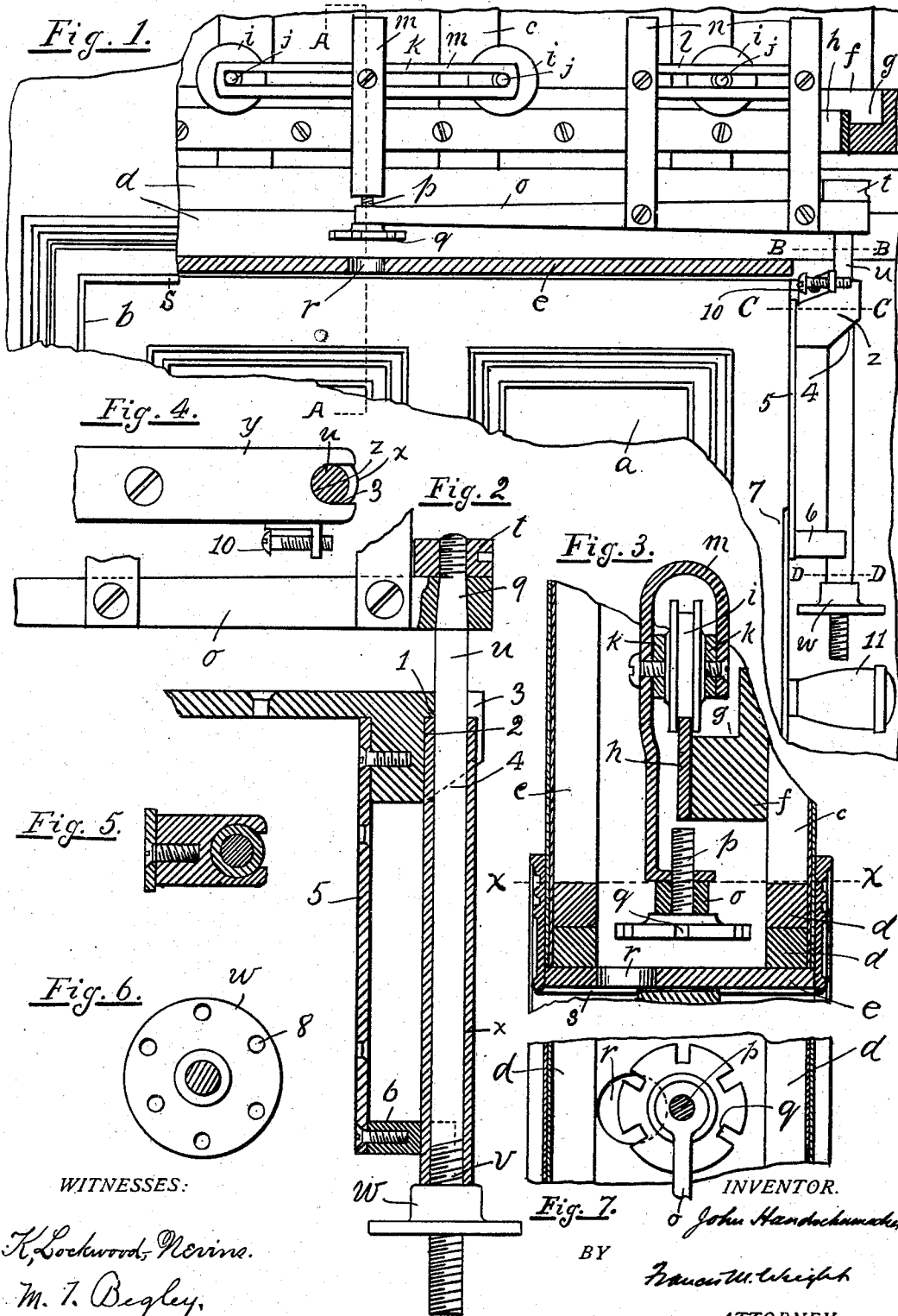
J. HANDSCHUMACHER.

SLIDING DOOR.

(Application filed Apr. 22, 1901.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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BY

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No. 679,962.

J. HANDSCHUMACHER.

SLIDING DOOR.

(Application filed Apr. 22, 1901.)

Patented Aug. 6, 1901.

(No Model.)

2 Sheets—Sheet 2.

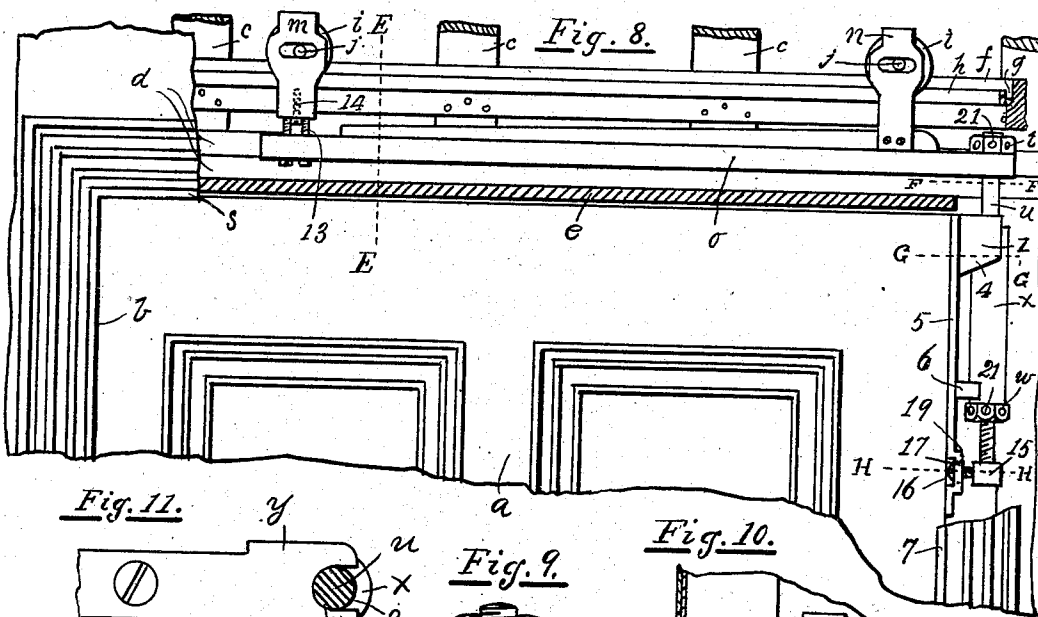


Fig. 11.

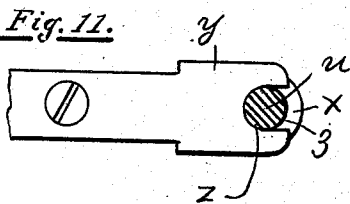


Fig. 9.

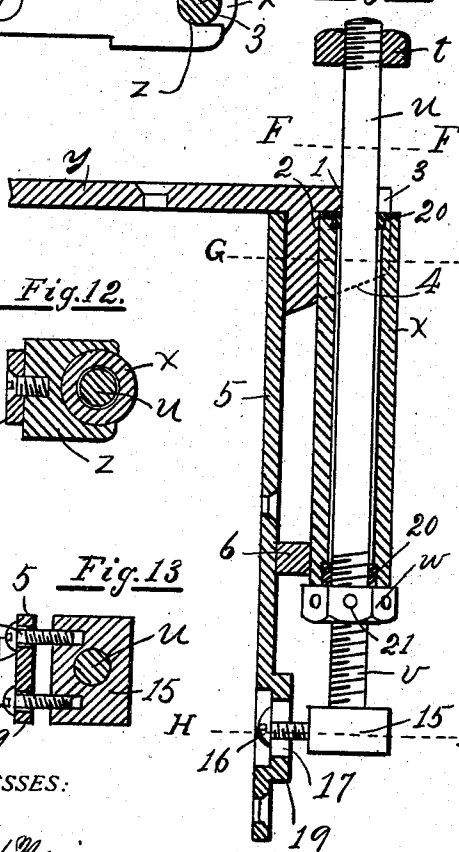


Fig. 10.

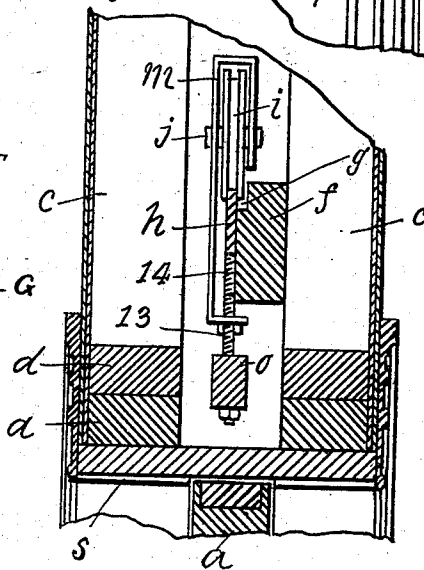


Fig. 12.

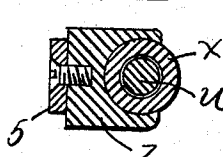


Fig. 13.

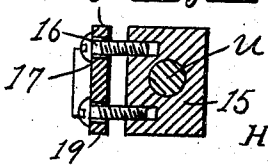


Fig. 14.

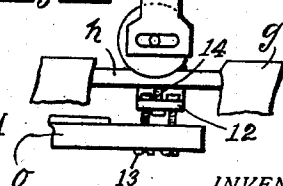
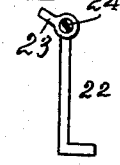


Fig. 15.



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UNITED STATES PATENT OFFICE.

JOHN HANDSCHUMACHER, OF SAN FRANCISCO, CALIFORNIA.

SLIDING DOOR.

SPECIFICATION forming part of Letters Patent No. 679,962, dated August 6, 1901.

Application filed April 22, 1901. Serial No. 57,001. (No model.)

To all whom it may concern:

Be it known that I, JOHN HANDSCHUMACHER, a citizen of Austria, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Sliding Doors, of which the following is a specification.

My invention relates to improvements in sliding doors. In such doors as at present constructed there is a considerable opening between the top of the door and the jamb therefor.

One object of my invention is to provide a construction in which there shall be no such opening; but the top of the door shall move in close proximity to the under side of the jamb therefor.

A further object of my invention is to provide means whereby the door may be readily and quickly adjusted to suspend the same plumb and also in the plane of the door-frame. Also I provide a construction by which the door can be placed in position after all the finish of the jamb has been put on and can also be easily removed from said jamb.

My invention therefore resides in the novel construction, combination, and arrangement of parts for the above ends hereinafter fully specified, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of my improved sliding door, the jamb being broken away to show the construction of the hangers and of the connections thereof with the door. Fig. 2 is an enlarged vertical section of the connection of the door with the hanger-arm. Fig. 3 is a vertical section on the line A A of Fig. 1. Figs. 4, 5, and 6 are cross-sections of Fig. 2 on the lines B B, C C, and D D, respectively. Fig. 7 is a horizontal section on the line X X of Fig. 3. Figs. 8 and 9 are views, similar to Figs. 1 and 2, of a modified form of the invention. Fig. 10 is a vertical section on the line E E of Fig. 8. Figs. 11, 12, and 13 are cross-sections of Fig. 9 on the lines F F, G G, and H H, respectively. Fig. 14 is a rear view of one of the hangers in this modification, the beam being broken away; and Fig. 15 is a detail showing a special form of wrench for screwing and unscrewing the nuts.

Referring to the drawings, *a* represents the door, and *b* the jamb therefor. At the top said jamb comprises the studs *c*, the rough headers *d*, secured to the lower ends of said studs, and the jamb-header *e*, secured on the under side of said rough headers. To the studs *c* on one side is secured a beam *f*, which is rabbeted at its upper edge, as shown at *g*, and to which is attached the track *h*. In former constructions the track has been secured directly to the studs and was therefore liable to deflection when said studs deviated from a plane surface. The present construction insures the track being maintained perfectly straight. Upon said track roll the wheels *i*, whose axles *j* move in slotted plates *k* *l*, attached to hangers *m* *n*. The front plates *k* are pivotally attached at their center to the single front hanger *m*, and in the slots of said front plates roll the axles of the two wheels *i*, while the rear plates *l* are rigidly attached at their ends to the two rear hangers *n*, and in the slots of said rear plates rolls the axle of a single wheel *i*. The hangers *m* *n* are attached to a hanger-arm *o*, the rear hangers *n* being rigidly attached to said arm, while the front hanger *m* is adjustably attached by means of a screw *p*, working in the threaded free end of said hanger-arm *o*. The head of said screw has notches *q* cut in its edge, and the jamb-header *e* has a hole *r* cut therein at any desired point, through which access is had to said notches *q* when the upper jamb *s* is removed. By screwing up or down said screw *p* the front edge of the door, corresponding to the free end of the hanger-arm, may be raised or lowered, as desired, to suspend the door plumb.

To the hanger-arm *o* is suspended, by means of a nut *t*, a stem *u*, threaded in its lower portion, as shown at *v*, and carrying on said threaded portion a nut *w*, supporting a sleeve *x*. By screwing said nut up or down on the stem *u* the sleeve *x* may be raised or lowered to bring the door into close proximity with or away from the jamb-header.

The door is supported upon the sleeve *x* by means of a plate *y*, countersunk on the top edge of the door and attached to the door and having a socket *z* at its end contracted, as at 1, to fit around the stem *u* and rest upon the top of the sleeve *x* and enlarged, as at 2,

to fit around said sleeve. Said socket is open at its rear side, as shown at 3, said opening being, however, less than a semicircumference in the upper portion; but as said socket is cut away obliquely in its lower portion, as shown at 4, the opening in the rear is greater than a semicircumference in the lower portion of the socket. Therefore when the sleeve x is lowered by screwing the nut w downward the door may be withdrawn from the stem and sleeve. A vertical plate 5 is secured to the inner edge of the door and also to the socket-piece z , and to said plate 5 is secured an abutment 6, against which the sleeve x rests, forming a guide for said sleeve as it is moved up or down.

When it is desired to remove the door, all that is necessary is to remove the upper jamb s and rear side jamb 7, to permit the door to be swung around the sleeve x out of its normal plane of reciprocation and then to screw down the nut w until the sleeve x drops down a sufficient distance to enable the opening 3 in the rear of the socket z to move past said sleeve x .

An important feature of my invention resides in the construction, whereby a hanger can be removed from the jamb and repaired or another hanger substituted therefor without tearing down any part of the jamb to get at said hanger. In the present construction of sliding doors it is found necessary to remove some part of the jamb in order to obtain access to the hanger in case of any defect in the operation thereof. It is even found necessary to remove the lath and plaster of the wall in which the door slides. With my construction the necessity for this is obviated and the hanger can be removed merely by loosening the screws which secure the hanger to the hanger-arm. This can be done by removing the door and then moving the hangers along the track into the recess into which the door slides.

The nut w has perforations 8, by means of which it can be turned in either direction by means of a hook.

In order to insure a tight union between the stem u and the hanger-arm o , the upper end of said stem is made conical or tapering, as shown at 9, and fits into an upwardly-tapering socket in the end of the hanger-arm o . By screwing down the nut t the tapering end of the stem u is forced firmly into the socket in the hanger-arm, thus insuring a tight joint.

A set-screw 10, the head of which may be covered with rubber, if desired, is provided, attached to the socket z , the purpose of which set-screw is to adjustably limit the movement of the door to close the same, this being of especial advantage for a pair of double doors. A rubber stop 11 is likewise used to limit the movement in the opposite direction.

In the modification shown in Figs. 8 to 14 only a single roller is used for each hanger. The front hanger is bent inward to form a horizontal flange 12, through which are

screwed vertical screws 13, passed through the hanger-arm. Through said flange is also screwed a third screw 14, the end of which comes into close proximity with the under side of the track h and prevents the front wheel jumping upward from the track. In this modification to the lower end of the stem u is rigidly attached a block 15, into which are passed two screws 16, passed through vertically-slotted holes 17 in a bent portion 19 of the plate 5. By means of these screws the door may be brought into the same plane as the door-jamb, since by screwing in a screw on either side and unscrewing the screw on the other side the horizontal direction of the door may be varied at pleasure. 20 represents leather rings interposed between the ends of the sleeve x and the socket z and nut t to prevent rattling and insure a close fit. In this modification the nuts t and w have sockets 21 in their periphery, and in Fig. 15 I have shown a special form of wrench for turning the nuts t and w . Said wrench comprises a bent handle 22, having adjustably secured thereto an arm 23, the point of which can enter one of the sockets 21 in the nuts t and w , and thereby rotate the same. The arm 23 can be turned to any direction in relation to the handle 22 and there secured or tightened by means of the screw 24.

I claim—

1. In a sliding door, the combination, with the door proper, of a stem attached to the inner edge of the door and projecting upwardly above the top thereof, a hanger-arm secured thereto and extending therefrom parallel with and above the top of the door, hangers attached to said arm, rollers supporting said hangers, and a track for said rollers, substantially as described.

2. In a sliding door, the combination, with the door proper, of a stem removably attached to the inner edge of the door and projecting upwardly above the top thereof, a hanger-arm secured thereto and extending therefrom parallel with and above the top of the door, hangers attached to said arm, rollers supporting said hangers, and a track for said rollers, substantially as described.

3. In a sliding door, the combination, with the door proper, of a track, rollers on said track, a hanger-arm suspended from said rollers, a stem secured to and suspended from one end of said hanger-arm, a sleeve on said stem, means for vertically adjusting said sleeve on said stem, and a plate attached to the door and having a bearing or socket resting on said sleeve, substantially as described.

4. In a sliding door, the combination, with the door proper, of a track, rollers on said track, a hanger-arm suspended from said rollers, a stem secured to and suspended from one end of said hanger-arm, a sleeve on said stem, means for vertically adjusting said sleeve on said stem, a plate attached to the door and having a bearing or socket resting on said sleeve, and means for adjusting said

door horizontally with reference to said plate, substantially as described.

5 5. In a sliding door, the combination, with the door proper, of a track, rollers on said track, a hanger-arm suspended from said rollers, a stem secured to and suspended from one end of said hanger-arm, a sleeve on said stem, means for vertically adjusting said sleeve on said stem, a plate attached to the 10 door and having a bearing or socket resting on said sleeve, and means for adjusting said hanger-arm vertically with reference to said rollers, substantially as described.

15 6. In a sliding door, the combination, with a door proper, of a track, rollers on said track, hangers on the axles of said rollers; a hanger-arm adjustably secured to said hangers, a vertical stem secured to said hanger-arm, a sleeve on said stem, a nut 20 screwed on said stem and supporting said sleeve and a plate secured to the door having a socket resting on the end of said sleeve, said socket being open at the rear side and cut away obliquely below to permit the plate 25 to be withdrawn when the sleeve is lowered, substantially as described.

30 7. In a sliding door, the combination, with a door proper, of a track, three rollers on said track, front and rear slotted plates carried by the axles of said rollers, the front plates being carried on the axles of two rollers, a hanger pivotally attached to said front plates, a hanger attached to the rear plates, a hanger-arm attached to said hangers, a 35 stem secured to and suspended from one end of said hanger-arm, and means for detachably securing the door to the stem, substantially as described.

8. In a sliding door, the combination, with

a door proper, of a track, rollers thereon, a 40 hanger-arm supported on said rollers, a stem detachably secured to the door, said stem having a tapering end, and said hanger-arm having at one end a corresponding socket, and means for drawing said tapering end 45 tightly into said socket, substantially as described.

9. In a sliding door, the combination, with a door proper, of a track, three rollers on said track, front and rear slotted plates carried 50 by the axles of said rollers, the front plates being carried on the axles of two rollers, a hanger pivotally attached to said front plates, a hanger attached to the rear plates, a hanger-arm, a screw for attaching the front end of 55 the hanger-arm to the front hanger, said screw having a head with a notched periphery, a vertical stem having a tapering upper end, the rear end of said hanger-arm having a corresponding socket, a nut on the threaded 60 projecting upper end of said stem, a sleeve on said stem, a nut on the threaded lower end of said stem for supporting said sleeve, said nut having a perforated head, a plate at- 65 tached to the door and having a bearing or socket resting on said sleeve, an adjustable stop for limiting the movement of the door to close the same, and a resilient stop limiting its movement in the opposite direction, 70 substantially as described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

J. HANDSCHUMACHER.

Witnesses:

FRANCIS M. WRIGHT,
M. T. BEGLEY.