(No Model.)

F. H. MUELLER.

DEVICE FOR OPERATING SLIDING DOORS.

No. 491,121. Patented Feb. 7, 1893.

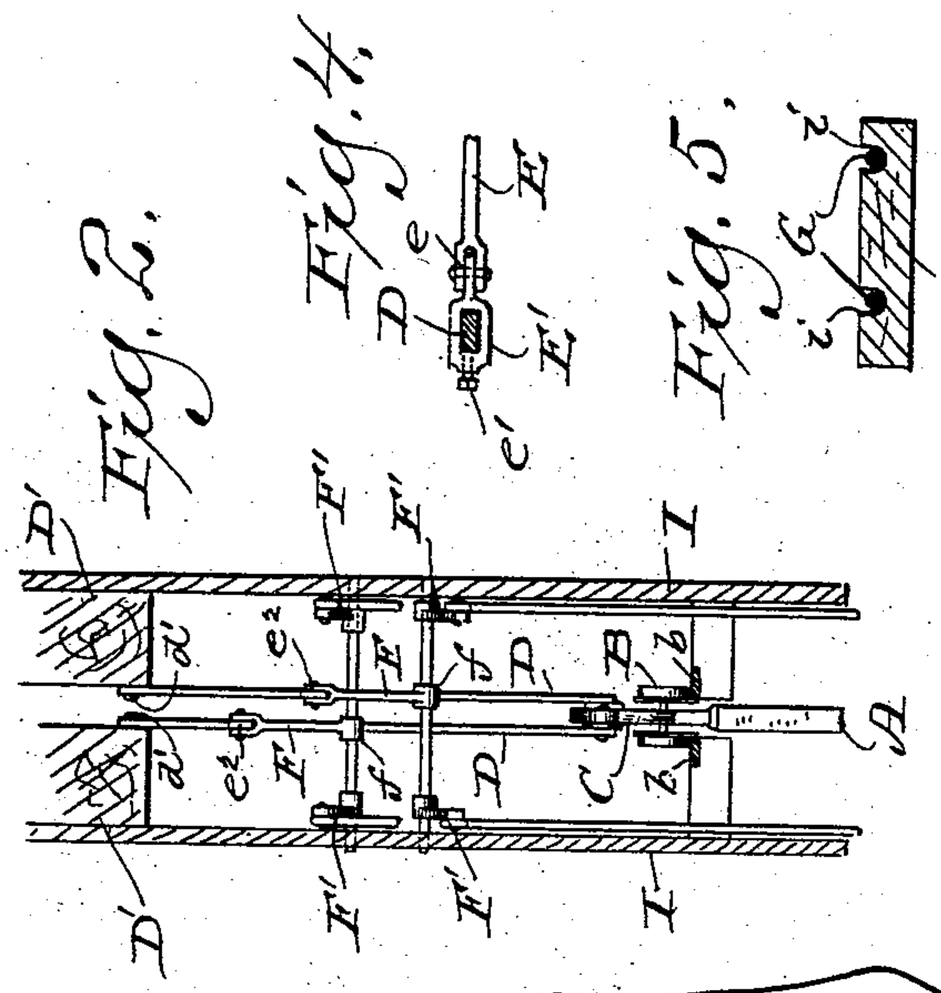

Fig. 1.

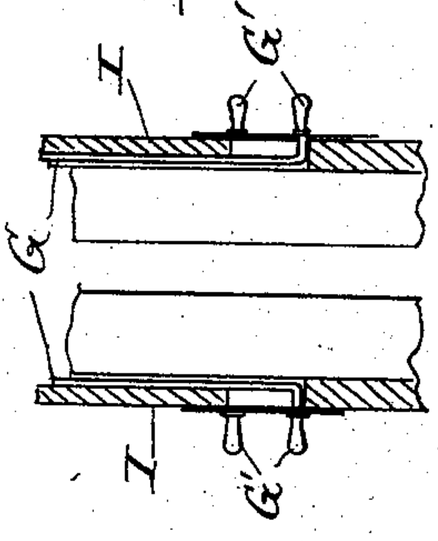

Fig. 3.

Fig. 5.

Fig. 4.

Witnesses
Geo. W. Young.
John E. Wiles.

Inventor
Frank H. Mueller
By H. G. Underwood
Attorney

UNITED STATES PATENT OFFICE.

FRANK. H. MUELLER, OF MILWAUKEE, WISCONSIN, ASSIGNOR, BY MESNE ASSIGNMENTS, OF ONE-THIRD TO JULIUS OELKE, OF SAME PLACE.

DEVICE FOR OPERATING SLIDING DOORS.

SPECIFICATION forming part of Letters Patent No. 491,121, dated February 7, 1893.

Application filed May 11, 1892. Serial No. 432,572. (No model.)

To all whom it may concern:

Be it known that I, FRANK. H. MUELLER, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Devices for Operating Sliding Doors; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to devices for operating sliding doors, and consists in the matters hereinafter described and pointed out in the appended claims.

In the accompanying drawings illustrating my invention: Figure 1 is a side elevation of a pair of sliding doors equipped with my operating devices, showing a portion of the upper part of the door casing and the wall above the doors broken away to better illustrate the construction and arrangement of the parts. Fig. 2 is a vertical sectional view of the same taken on line 2—2 of Fig. 1. Fig. 3 is a similar sectional view taken on line 3—3 of Fig. 1. Fig. 4 is a detail sectional view of one of the parts, taken on line 4—4 of Fig. 1. Fig. 5 is a horizontal detail sectional view taken on line 5—5 of Fig. 1.

In said drawings:—A A represent a pair of doors suitably engaged with hangers B B having operative engagement with the usual track *b*. Standards C C are arranged upon the upper edges of the doors A A and are provided with vertically disposed slots *c c* as shown. Pendulous levers D D are pivotally engaged at their upper ends, with the joist D′ above the door, as at *d′ d′* and said levers carry at their free lower ends, suitable anti-friction rollers *d d* arranged to engage with the slots *c c* in the standards C C, the construction being such that, by a vibrating movement of either lever in one direction the connected door will be opened, and by a movement of the lever in the opposite direction, the door will be closed. Links E E are connected with the levers D D in any desired manner, preferably by means of clamps E′ E′ or equivalent attaching devices, to which said links are pivoted as at *e e* and the clamps being adjustably engaged with the levers D D by means of set screws *e′ e′*. The other ends of the links E E are pivotally connected with suitable rock arms F F, as shown at e^2 e^2, said rock arms being secured to rock-shafts *f f* extending across the open space or "pocket" for the door inside of the wall. Upon these rock-shafts, adjacent to the inner surfaces of the wall are provided arms F′ F′, to the free ends *g g* of which are pivotally connected vertically movable rods G G which extend downwardly inside of the door casing and extend outwardly at their lower ends through slots *h h* in a plate H secured to the casing, and are provided upon their projecting ends with knobs or handles G′ G′. As illustrated more particularly in Figs. 2, and 3, two of these arms F′ and two of the rods G G are preferably engaged with each of the rock shafts *f f*, and the arms F′ F′ are arranged close to the inside surfaces of the wall, and the rods G G are arranged to lie close to the inner surfaces of the door casing I. If desired the said inner surfaces of the door casing I may be provided with vertically disposed grooves *i i* and the rods G G arranged to lie therein as illustrated in Figs. 3 and 5. It follows from this construction that a vertical movement of one of the handles G′ will operate to rock the connected arm F′ the rock-shaft *f* to which said arm is secured and the arm F, so as to give a longitudinal movement to the link E and thereby vibrating the pendulous lever D. The movement of said pendulous lever is communicated by means of the engagement of its lower end with the slotted standard C, to the door so as to cause the same to move upon the track *b* in the usual manner.

In applying my improved device to sliding double doors I prefer to arrange the rock arms and connected parts in the manner shown in Fig. 1, of the drawings, in which both of the arms F′ F′ project from the rock shafts *f f* in the same direction, so that a downward or upward movement of the two handles will operate to move the two doors in the same direction.

Inasmuch as the doors move in opposite directions when opened or closed, it is obvious that in effecting the movements of the doors one of the handles is moved up while the other is moved down, and for this reason, I prefer to arrange the rods G G and handles G′ G′ so that one of said handles will rest at

the bottom and the other at the top of the slot when the doors are closed. In order to open both doors, it is only necessary to depress the upper knob or handle and raise the lower one.

I prefer for convenience of operation to arrange both rods and handles at the same side of the doorway but the arrangement of said parts may be varied if desired. I also prefer to provide a pair of the handles G′ G′ upon each side of the wall as shown, so that the doors may be operated by a person standing in either room with which the doors may communicate.

My improvement may obviously be applied to single sliding doors as well as to double doors, in which case, but one lever D link E, rock arm F and connected parts would be employed.

By the described adjustable connection of the clamps E′ with the levers D D, said clamps may be secured upon the levers D D nearer to or farther from their pivotal connections *d′ d′* so as to produce any desired movement of the free ends of said levers and the doors with a given movement of the handles and thereby enabling the device to be applied to doors of different widths.

My improved device is simple and strong in its construction, cheap and durable, easily operated and not liable to get out of order.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. A device for operating sliding doors comprising a pendulous lever pivotally supported at its upper end, a slotted standard upon the upper edge of the door having an operative engagement with the free end of said lever, a rock shaft carrying two arms, a link pivotally connected with the end of one of said arms at one end and adjustably engaged with said pendulous lever at its other end, and a vertically movable rod provided at its lower end with an operating handle and having operative engagement at its upper end with the other one of said arms, substantially as set forth.

2. The combination with a pair of sliding doors, of a pair of pendulous levers pivotally engaged at their upper ends with timbers above the doorway and provided at their lower ends with suitable anti-friction rollers, a slotted standard upon the upper edge of each of said doors having operative engagement with the roller upon one of said pendulous levers two rock shafts each carrying an arm linked to one of said pendulous levers, two arms secured to each of said rock shafts and vertically movable rods engaged at their upper ends with said arms and arranged to extend downwardly adjacent to the inner surfaces of the wall and provided at their lower ends with angular projections adapted to extend outwardly upon opposite sides of the wall and each provided with an operating handle, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

FRANK. H. MUELLER.

Witnesses:
JOHN E. MILES,
C. W. SCOTT.