

(No Model.)

I. ENGEL.
OPENER OR CLOSER FOR FOLDING DOORS.

No. 522,936.

Patented July 10, 1894.

fig. 1.

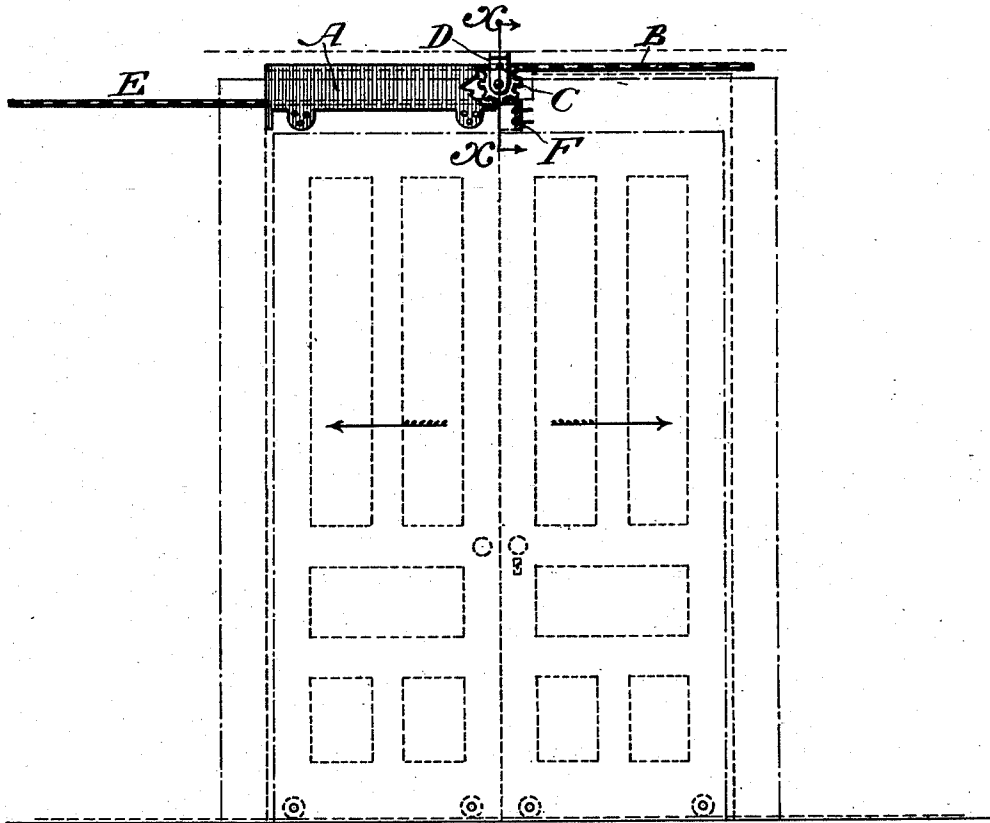
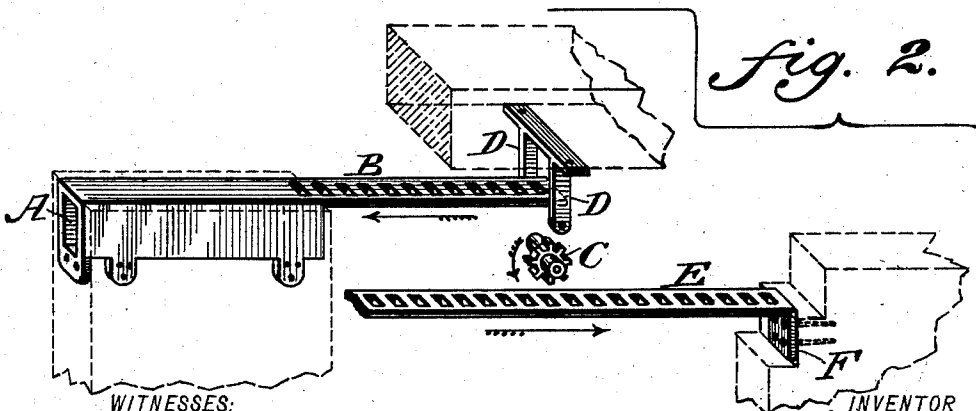


fig. 2.

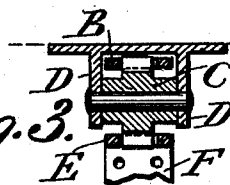


WITNESSES:

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fig. 3.



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OPENER OR CLOSER FOR FOLDING DOORS.

SPECIFICATION forming part of Letters Patent No. 522,936, dated July 10, 1894.

Application filed November 14, 1893. Serial No. 490,880. (No model.)

To all whom it may concern:

Be it known that I, ISIDOR ENGEL, a subject of the Emperor of Austria-Hungary, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Openers or Closers for Folding Doors, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to an improvement in a device for simultaneously opening and closing the members of a pair of folding doors, and consists of a rack which extends from a box, the latter being adapted to be connected with one of the doors, a rack adapted to be secured to the other door, and of such length as to be retained within said box, a hanger which is adapted to be secured to the frame above the doors, and a pinion which is mounted on said hanger and meshes with said racks, said hanger also serving as a guide for the rack which projects from the box, thus simplifying and cheapening the construction of such devices.

Figure 1 represents a partial front view and partial vertical section of an opener and closer for folding-doors embodying my invention, the doors being shown in dotted lines. Fig. 2 represents a perspective view thereof on an enlarged scale, the parts being separated. Fig. 3 represents a vertical section on line *x, x*, Fig. 1, on an enlarged scale.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings: A designates a box, from one end of which projects the rack B.

C designates a pinion which is mounted on hangers D, the latter being connected with the top of a door frame at or about the center thereof.

E designates a rack which is provided with an attaching ear F, and located beneath the rack B, and has its outer-end portion within the box A, it being noticed that the pinion C is intermediate of the two racks and meshes with the same, so that motions may be im-

parted to the two racks in opposite directions.

The box A is secured to one door and the rack E to the other door, the operation being as follows: When either door is drawn open, the rack connected therewith rotates the pinion, and the latter moves the opposite rack, whereby the other door is opened. When a door is closed, the rack is rotated in reverse direction, and thus the other door will be closed. The rack E is of such length that it remains within the box A at all times, it being thereby guided in its motions and prevented from lateral displacement or dropping at its free end. The hangers D also serve to guide the rack B, thus preventing lateral play thereof, and keeping the same true in its motions.

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

1. The box A with the rack B connected with and projecting therefrom, the rack E below said rack B, having the attaching ear F, the stationary hanger D, the pinion C mounted in said hanger and located intermediate of the two racks B and E, said rack E occupying the box A, as the guide thereof, and the rack B being within the hanger D, as the guide thereof, the parts named being combined substantially as described.

2. In a door opening and closing device, the box A with the upper rack B secured thereto, the opposite lower rack E, the pinion C between said racks, and the stationary hanger D carrying said pinion, said rack E being passed through said box A, and projecting beyond the outer end of the same, and said rack B projecting from the inner end of said box and passing through the hanger D above the pinion C, the parts named being combined substantially as described.

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Witnesses:

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