

P. K. O'LALLY.

SPRING HINGE

No. 257,373.

Patented May 2, 1882.

Fig. 1.

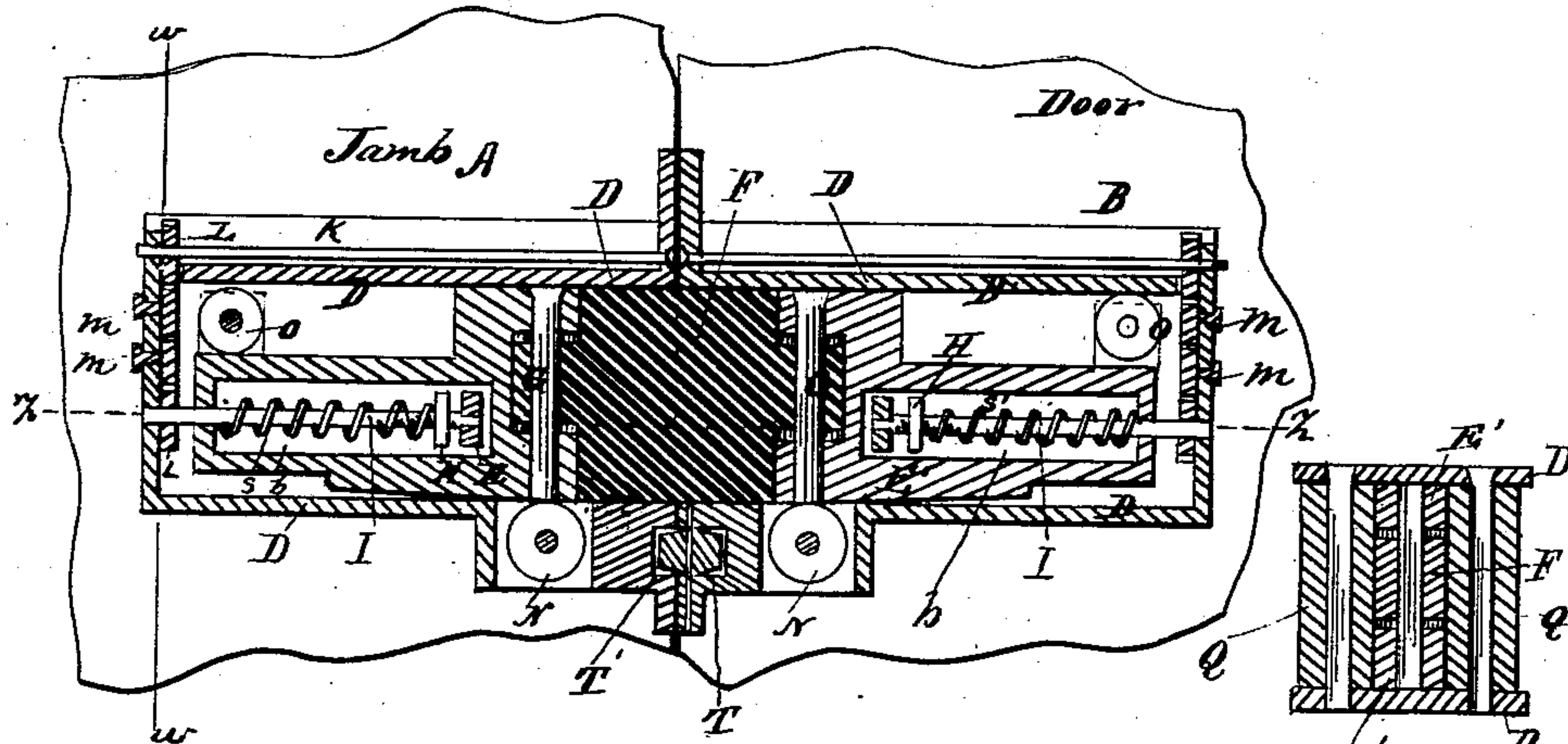


Fig. 3.

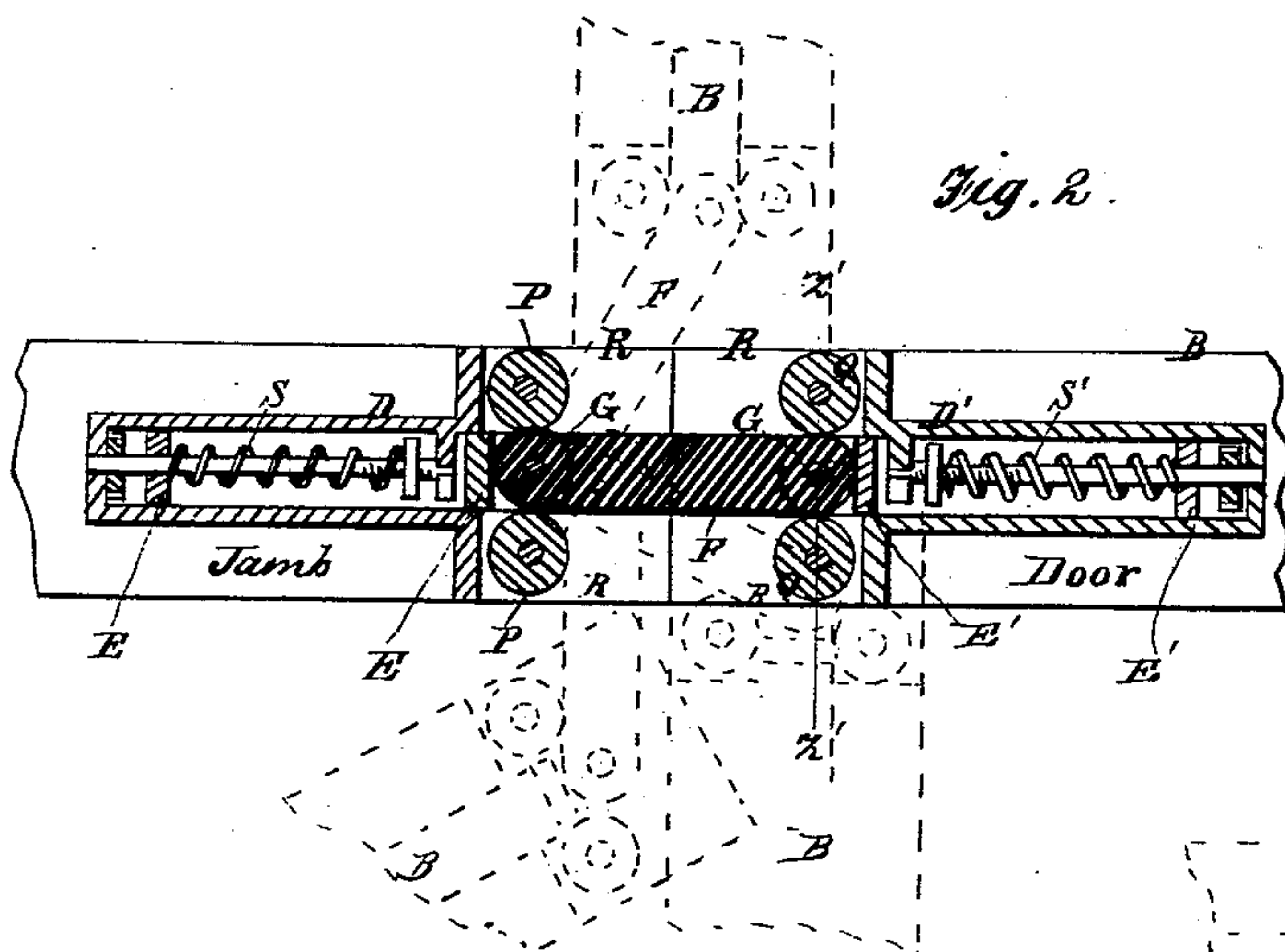


Fig. 2.

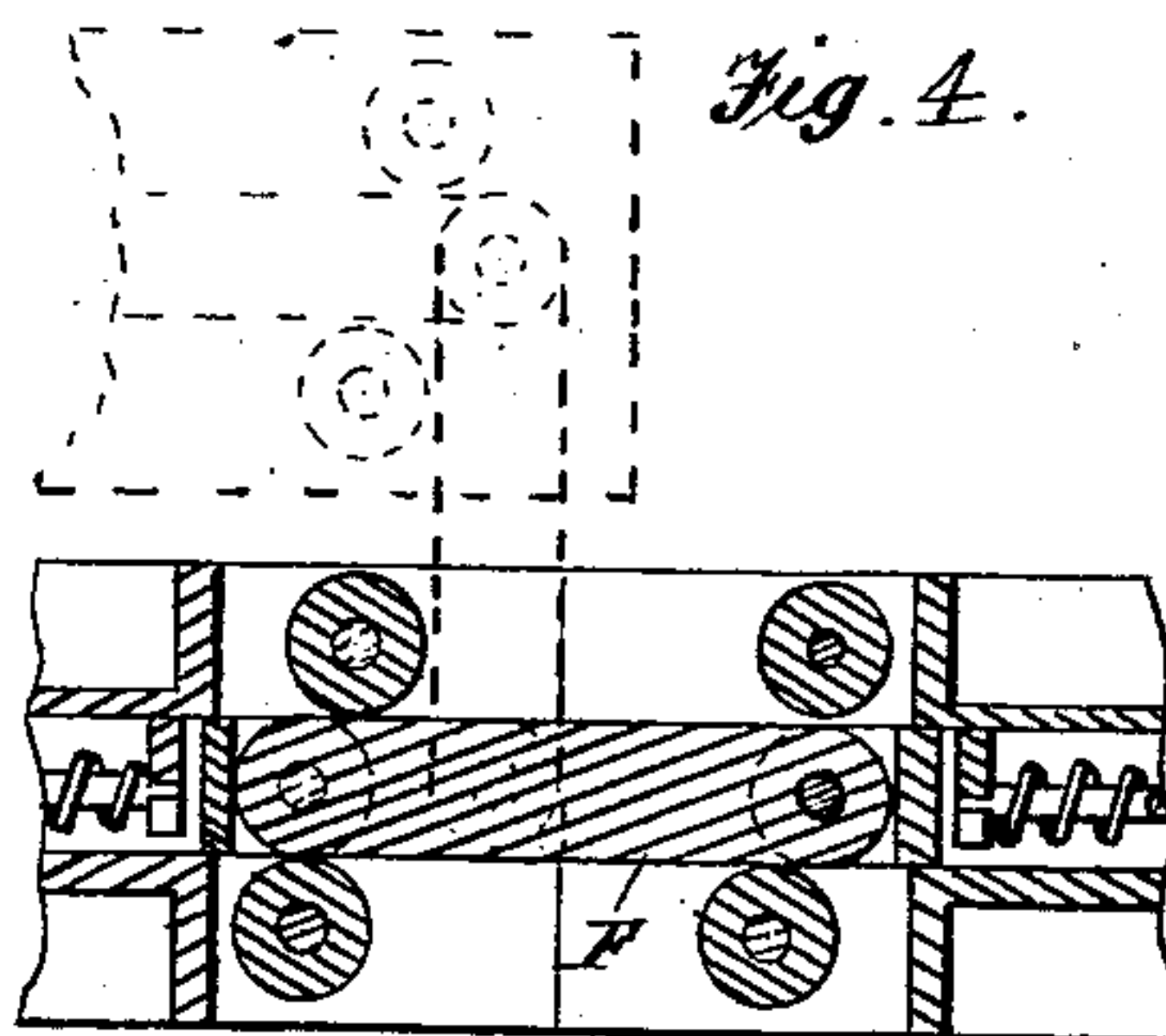


Fig. 4.

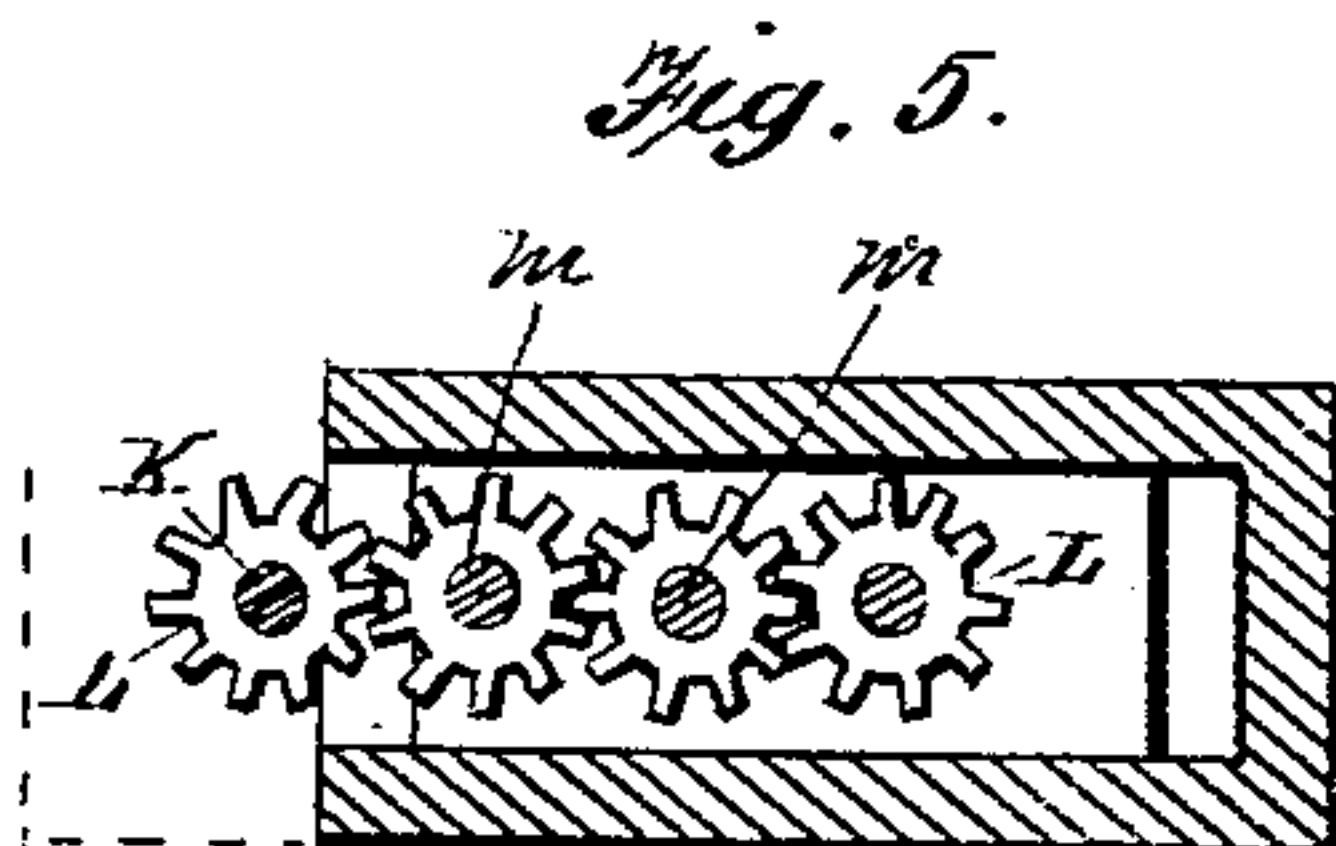


Fig. 5.

Attest,
W. H. N. Knight,
J. K. Knight

Inventor,
P. K. O'Lally
by Assoc. Atty, Wm. H. Finckel
Wright & Brown,
attys.

UNITED STATES PATENT OFFICE.

PATRICK K. O'LALLY, OF BOSTON, MASSACHUSETTS.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 257,373, dated May 2, 1882.

Application filed May 19, 1879.

To all whom it may concern:

Be it known that I, PATRICK K. O'LALLY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Hinges, of which the following is a specification.

This invention relates to hinges which are adapted to swing in both directions, and has for its object to combine a spring or springs with a hinge of this class adapted to automatically close the door or other swinging object or body to which the hinge is applied, and to be put under increased tension by the opening of the door without being twisted or bent laterally.

To this end the invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a vertical section of a portion of a door and jamb connected by a hinge embodying one form of my invention. Fig. 2 represents a section on line *z z*, Fig. 1. Fig. 3 represents a section on line *z' z'*, Fig. 2. Fig. 4 represents a modification of the arrangement of the rollers shown in Fig. 2. Fig. 5 represents a section on line *w w*, Fig. 1.

Similar letters of reference indicate like parts in all the figures.

In the drawings, A B represent respectively a jamb and door or other analogous fixed and movable parts connected by one or more hinges. The chief peculiarity of my improved hinge is that it is connected to one or both of the parts A B by a spring or springs, S, whereby the hinge is drawn with a yielding pressure toward the part or parts with which it is thus connected. In Figs. 1 and 2 the hinge is connected by springs both with the jamb and door, and the hinge is composed of two metallic casings or mortises, D D', adapted to be attached to the door and jamb-plates E E', adapted to slide longitudinally in the mortises D, and a link, F, connected to the outer ends of the plates E E' by pintles or pivots G G, passing through sockets in the ends of the plates and links, as shown in Fig. 1. The connection of the link to the plates E E' is such that the link can swing laterally in both directions on the plate E, and the plate E' can swing in like manner on the link. The springs S S' are

arranged to hold the plates E E' in the mortises D D' with a yielding pressure. The spring S S' are preferably located in slots *b b* in the plates E E', and their outer ends bear against abutments H H, rigidly attached to the mortises and projecting into the slots *b*, while their inner ends bear against the inner ends of the slots *b*.

The abutments H are preferably nuts located on threaded portions of shafts I I, which are journaled in bearings rigidly attached to the mortises, and are adapted to be rotated, and thus move the abutments H in such manner as to tighten or loosen the springs and increase or diminish the pressure thereof on the hinge, the abutments H being guided by the opposite sides of the slots *b*, so that they will not rotate with the shafts I. Said shafts are rotated preferably by shafts K K, journaled in bearings on the mortises D D', and extending to the outer surfaces of the jamb, and door-pinions L L on the shafts I K and intermediate pins, M M, connecting the pinions L L. The shafts K are provided with slots in their outer ends, so that they can be rotated by a screw driver. The springs can be adjusted by the means described when the door is opened without disconnecting any of the parts.

N N represent horizontal friction-rollers journaled in the mortises D D', and adapted to support the plates E E', and O O represent similar rollers journaled in the upper portions of the plates E E', and adapted to bear upon the upper surfaces of the mortises.

P P Q Q represent vertical friction-rollers journaled in the mortises D D', and arranged to bear against the opposite sides of the plates E E' and link F. These rollers constitute lateral supports for the sides of the plates E E' at their outer ends and fulcrums for the link F in its lateral movements, as indicated by dotted lines in Fig. 2. The sides of the mortises D D' are removed at the outer ends of the mortises to form lateral openings R, which permit the free lateral play of the link F through the sides of the jamb and door, as shown in dotted lines. When the door is opened in either direction the link F, plates E E', and springs S S' permit the door to be oscillated and at the same time moved laterally, so that it can assume the different positions shown in dotted lines in Fig. 2, the link

F bearing against the rollers P Q when it is swung laterally, and drawing the plates E E' outwardly against the pressure of the springs S S'. The springs therefore always endeavor to draw the plates E E' into their mortises. This effort of the springs causes them to draw the door to a closed position, unless the door is left momentarily in either of the positions shown in dotted lines in Fig. 2. When the door is in said positions the springs, instead of closing the door, hold it with some force, so that it remains open until special effort is made to swing it partly toward its closed position, when the springs will draw it to place. The hinge is therefore adapted both to close the door and to hold it open.

To insure the proper position of the door with relation to the jamb when the door returns to place after being opened, I provide the door with a rounded projection, T, which is preferably a roller, and provide the jamb with a recess, T', adapted to receive the projection T. When the door swings to place the roller or projection T enters the recess and prevents the door from stopping short of or going beyond its proper position.

By arranging the rollers P P Q Q diagonally, as shown in Fig. 4, I locate one roller of each pair nearer the proximate edges of the door and jamb, so that when the door is opened it cannot strike the corner of the jamb, and will be separated therefrom, as shown in dotted lines in Fig. 4.

I claim—

1. The combination of springs S S', a link, F, pivotally connected with the same, and rollers P P Q Q, substantially as and for the purpose described.

2. The combination of the casings or mortises D D', the friction-rollers N O, the vertical rollers or fulcrums P P Q Q, the plates E E', the springs S S', and the link F, as set forth.

3. The casings or mortises D D', containing the sliding plates, springs, and link, and provided at their outer ends with lateral openings to permit the free lateral movement of the link, as set forth.

4. In combination with a door and its jamb or their equivalents, connected by a hinge adapted to swing in both directions and give the door a lateral movement, a rounded projection or roller, T, located on the edge of one of the parts connected by the hinge, and a recess in the edge of the other part, adapted to receive said projection, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PATRICK K. O'LALLY.

Witnesses:

GEORGE W. PIERCE,
C. F. BROWN.