

T. F. Engelbrecht,
Spring Hinge.

No. 7,953.

Patented Feb. 25, 1851.

Fig. 1.

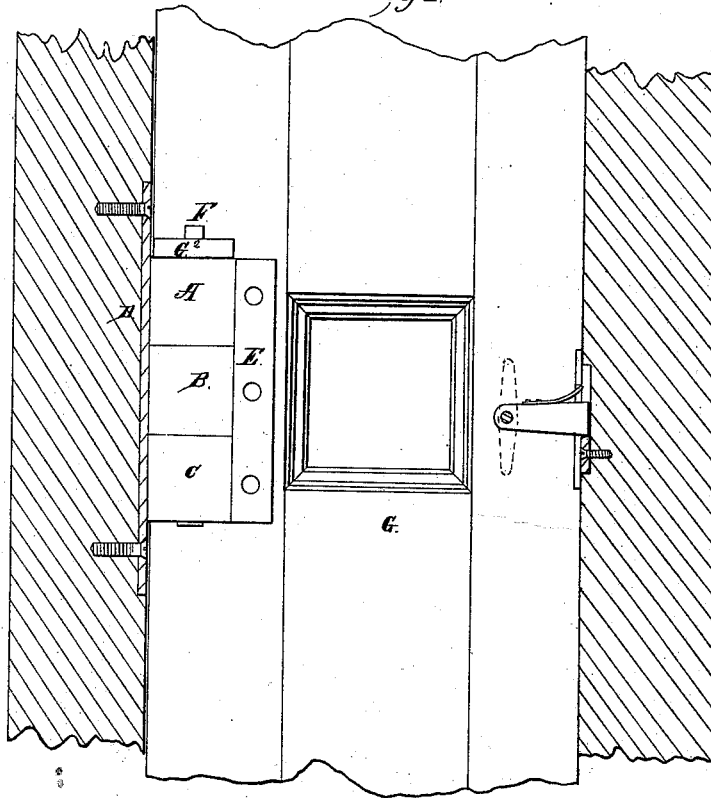


Fig. 2.

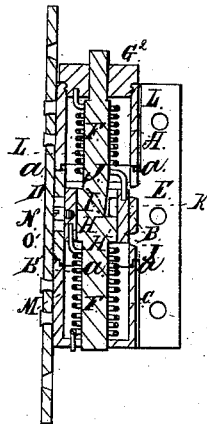


Fig. 3.

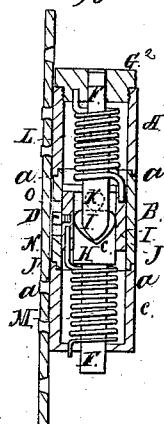


Fig. 4.



UNITED STATES PATENT OFFICE.

THEODORE F. ENGELBRECHT, OF NEW YORK, N. Y.

IMPROVED DOUBLE-ACTING SPRING-HINGE.

Specification forming part of Letters Patent No. 7,953, dated February 25, 1851.

To all whom it may concern:

Be it known that I, THEODORE F. ENGELBRECHT, of the city, county, and State of New York, have made a certain new and useful Improvement, being a Self-Acting Spring-Hinge for the Entrance-Doors of Hotels and other Buildings; and I do hereby declare the following to be a full and clear description thereof, reference being had to the annexed drawings, making part of this specification.

Figure 1 represents a sectional elevation of the door and door-frame, showing the spring-hinge. Fig. 2 is a vertical section through the spring-hinge, the door being in a closed position. Fig. 3 is a vertical section, the door being opened from the outside and the upper spring being contracted lengthwise its coil and unwound. Fig. 4 is a horizontal section showing the spindle, tumbler, and inclined plane.

The same letters on the above figures indicate the same parts.

The cylindrical case which forms the hinge and within which the spindle, cylindrical rotating tumbler, and springs are inclosed consists of three parts or sections A B C, the parts or sections lettered A C being secured to a plate D, which is confined by screw-bolts to the frame of the door, and the part or central section B, which is confined by means of rims or flanges *a a*, projecting from said central section B and fitting into grooves corresponding with the rims or flanges in the adjacent ends of the parts or sections A C, is secured by a plate E to the door G and permitted to turn with the opening and closing of the same.

F is a spindle placed in a vertical position in the case, its lower end passing through an opening in the closed end of the section C and its upper end made square and passing through a corresponding opening in a nut G², screwed into and forming the cap or end of the upper section A of the case, by which the spindle F is prevented from turning during the opening and closing of the door. The middle of this spindle F is increased in diameter to form a cylindrical shoulder H, on the upper end of which is formed an inclined plane I, commencing from a point *c* near the middle of the length of said shoulder and extending on either side of the spindle to the top of the same.

J is a rotating cylindrical tumbler open at both ends and made to fit over the cylindrical shoulder H of the spindle F and provided with a heart-shaped projection K on its inner side for the purpose of passing over said inclined plane I on the opening and closing of the door, the movement of said heart-shaped projection being from the lowest point of the inclined plane I to a point diametrically opposite, as shown in Fig. 3, the object of which is to allow the door to find its own center or be checked in its movement when the point of the heart-shaped projection shall have passed the lowest point of the inclined plane, and thus the door is closed and held in that position by means of the inclined plane I and projection K of the cylindrical rotating tumbler.

L is a helical spring inclosed in the upper section or part A of the case, one end of which is attached to the cylindrical rotating tumbler J and the other end to the cap-nut G² in such a manner that when the door shall have been opened from the outside the spring L will be contracted lengthwise its coil and at the same time be unwound, and the lower spring M will be wound up and expanded lengthwise its coil, and will thus force the door closed on being relieved.

M is a helical spring confined in the lower section or part C of the case, one end of which is secured to the cylindrical rotating tumbler J and the other end in the end of the section C of the case in such a manner that when the door G shall have been opened from the inside the spring M will be unwound and at the same time be expanded and will force the door closed on being relieved. The springs L M do not act independently, but assist each other, one being contracted lengthwise its coil and wound up, while the other is expanded and unwound during the opening and closing of the door. The upper spring L may be made stronger than the lower one for the purpose of preventing the door from being opened by the pressure of the wind from the outside.

The spindle F, in connection with the cylindrical rotating tumbler J, is made to rise and fall alternately (the spindle moving down and the tumbler up) during the passage of the heart-shaped projection K over the inclined plane I sufficiently to impart to the

springs L M a contraction and expansion lengthwise their coil in connection with the winding up and unwinding of said springs, by which they are made to act by torsion and expansion by the motion of the door in either direction, and thus each spring is made to have the effect of two in closing the door. The middle section B of the hinge-case is provided with a slot N to receive the head of a pin or screw O, screwed into the tumbler J, to allow the tumbler to rise and fall in connection with the movement of the spindle F, and by which screw the tumbler J is secured to the central section B of the hinge-case and caused to rotate therewith when the door shall have been opened or closed. These spring-hinges may be entirely concealed within the door and door-frame, and thus relieve the door from the appearance of hinges and springs ordinarily employed, the hinge being a cylindrical sectional case confined in the door and inclosing the springs, spindle, and tumbler, so that the whole is concealed from view, the edge of the door being convex and made to fit a corresponding concavity in the door-frame.

Having thus described my improvements in the spring-hinge for the entrance-doors of hotels, &c., I wish it to be understood that I do

not claim the combination of an adjustable curved inclined plane with a portion of a hinge and an adjustable bearing-roller with the other portion of the hinge; but

What I do claim as new, and desire to secure by Letters Patent, is—

The manner of combining the helical springs L and M with the cylindrical rotating tumbler J and cylindrical sectional case, so that by the rotation of the cylindrical tumbler J the heart-shaped projection K will be made to traverse over the inclined plane I and cause the tumbler J to rise and fall, and thus compress and expand the helical springs lengthwise their coil and simultaneously therewith wind and unwind said helical springs around the spindle F, and thus cause them to act (by the motion of the door in either direction) by torsion and expansion to close the door when it shall have been opened, as described and represented.

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

THEODORE F. ENGELBRECHT.

Witnesses:

A. E. H. JOHNSON,
J. L. SMITH.