(No Model.)

J. H. ALEXANDER

SPRING HINGE.

No. 269,986. Patented Jan. 2, 1883.

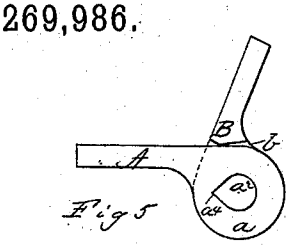

Fig 5

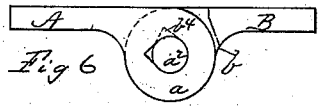

Fig 6

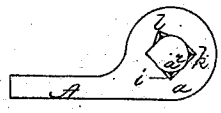

Fig 7

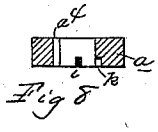

Fig 8

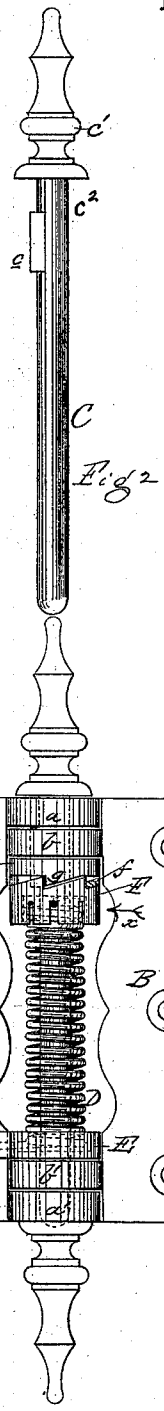

Fig 2

Fig 1

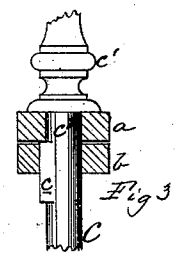

Fig 3

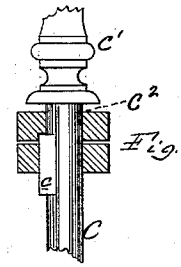

Fig 4

Fig 9

WITNESSES:

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Jos. B. Connolly

INVENTOR,

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ATTORNEYS.

UNITED STATES PATENT OFFICE.

JAMES H. ALEXANDER, OF PHILADELPHIA, PENNSYLVANIA.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 269,986, dated January 2, 1883.

Application filed April 6, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. ALEXANDER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Hinges; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a front elevation of a spring with my improvements applied. Fig. 2 is an elevation of pintle. Figs. 3 and 4 are vertical sections of pintle and leaf-lugs. Figs. 5, 6, and 7 are plans of lugs. Fig. 8 is a vertical section of one of the lugs. Fig. 9 is a plan of washer.

My invention has for its object to provide means whereby the tension of springs in spring-hinges may be regulated.

A still further object of my invention is to provide a hinge by means of which a door or window to which it is applied may be locked when closed or in either a wholly or partly opened position.

My improvements consist in the peculiar construction and combination of parts hereinafter set forth, having reference, first, to the combination, with a spring-hinge, of a ratchet-collar in which one end of said spring is secured and a washer with which said ratchet clutches or engages, said washer being provided with means whereby it is made fast or locked on the hinge-pintle; and, second, to the combination, with a pintle having a fin, of a hinge-leaf having notches into which said fin may be partially withdrawn when the hinge is in certain positions, and retained therein by the tension of the spring, which causes the washer that engages with the ratchet-collar to press against the fin of the pintle, thereby effecting the locking of the door to which said hinge is applied when such door is closed or in a wholly or partly open position.

Referring to the accompanying drawings, A and B represent two leaves of a butt-hinge, and C the pintle thereof. Said leaves have lugs *a a'* and *b b'*, with eyes a^2 a^3 and b^2 b^3 for the passage of the pintle. The latter has a fin, *c*, and the eyes a^2 b^2 have notches a^4 and b^4, respectively, for the passage of the fin, said notches registering with each other only when the leaves stand with their backs at or about right angles with one another, as shown in Fig. 5.

D is a spiral spring encircling said pintle. One end of said spring engages with a loose collar, E, on the pintle, having a projecting lug, *e*, which abuts against one of the leaves, A. The other end of said spring is secured in or to a collar, F, having ratchet-teeth *f* on one of its ends, as shown.

G is a washer having one or more ratchet or clutch teeth, *g*, adapted to engage with the teeth *f* of collar F, and having also an eye, *g'*, for the passage of the pintle, and a notch, g^2, therein for the passage of the fin *c*. This washer is located between the lug *b* and the collar F. The pintle-fin *c* starts sufficiently far below the head or acorn *c'* to leave a round part, c^2, above the fin equal in depth to the thickness of the lug *a*, so that when said pintle is in its usual position it will turn freely in the eye of said lug *a*. Said fin is also of sufficient length and so located that it will occupy the notches or corners b^2 and g^2 in the lug *b* and washer G, respectively, when the pintle is in its normal position, under which condition, when one of the leaves is turned by the opening or closing of the door, the other leaf remaining stationary or fixed on the jamb, the pintle will be rotated, carrying with it the washer G. As said washer G engages by its teeth *g* with the collar F the latter is also rotated, carrying with it the end of the spring D, thus winding the latter or producing tension therein, the other end of said spring being held in the collar E, which is incapable of moving by reason of its lug *e* abutting against leaf A, as shown.

To increase the tension of the spring D, the ratchet-collar F is rotated by hand in the direction of the arrow *x*, thus bringing different teeth into engagement on the part of itself and the washer G.

The eye a^2 of the lug *a*, in addition to the notch a^3, which extends throughout its length and permits the passage of the pintle-fin, has three other notches, *i k l*, which extend from the inner or under side of the lug only part way through the latter. Into one of these notches, *i*, the fin *c* may be withdrawn when the

two leaves of the hinge are in the same plane—the position they occupy when a door to which they are attached is closed. It may be withdrawn into the notch *k* when the leaves stand at right angles to each other, as they do when a door to which they are attached is partly open and standing perpendicular to its jamb; and it may be withdrawn into the notch *l* when the leaves stand parallel or folded—the position they occupy when the door is opened as fully as possible. To move the fin into these notches the collar F is slid down by hand against the pressure of the spring D and the pintle drawn upward, the fin of course being aligned with the notch it is desired to have it enter. When the fin is in any of the notches *i k l* the pintle cannot rotate in the eye of the lug *a*, and hence the hinge is locked, the pintle being held in its elevated position by frictional contact between the fin and the collar F, which is pressed against the fin by the tension of the spring D. To unlock the hinge the pintle is slid down on the spring, so as to move its fin out of the notch in the eye of lug *a*.

As the notches a^4 b^4 in the lugs *a b* register only when the hinge-leaves stand relatively as shown in Fig. 5, and as said leaves cannot be brought into such position when the hinge is secured to a door and its jamb, it follows that the pintle may be inserted to secure such leaves together when the hinge or one of said leaves is detached from the door or jamb, but cannot be withdrawn when both said leaves are fastened in place on such door and jamb.

The washer G affords means for locking the ratchet-collar F to the pintle, so as to cause said ratchet and pintle to move together, and thus produce the necessary tension of the spring, while at the same time said ratchet may be adjusted or turned on said collar, so as to increase or regulate such tension. The notches *i k l* in the lug *a*, permitting the pintle-fin to enter thereto, allow the hinge to be locked in several positions, thus enabling a door to which my improved hinge is applied to be held fast, either when closed or when partly or wholly opened, dispensing with hooks, braces, or equivalent supplementary devices for this purpose.

I do not limit my invention to the use of three notches for locking purposes, as a greater or less number may be employed.

What I claim as my invention is as follows:

1. The combination of pintle C, having fin *c*, with spring D and leaves A B, the eye-lug of leaf A having an internal notch or notches into which the said fin may be withdrawn, and the said spring serving to maintain the pintle in its elevated position by frictional contact, substantially as set forth.

2. In a spring-hinge, the combination of the following elements: a pintle having a fin or lateral projection, a hinge-leaf and a washer, having each an opening for the passage of said pintle, and a notch for the reception of the pintle fin or projection, said washer having also one or more ratchet-teeth, a ratchet engaging with said washer, and a spring, one of whose ends is secured to said ratchet, whereby the spring is fastened at one end to the leaf through the medium of the pintle, washer, and ratchet, the latter also affording means for varying the tension of said spring, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 1st day of April, 1882.

JAMES H. ALEXANDER.

Witnesses:
ANDREW ZANE, Jr.,
WILL H. POWELL.