

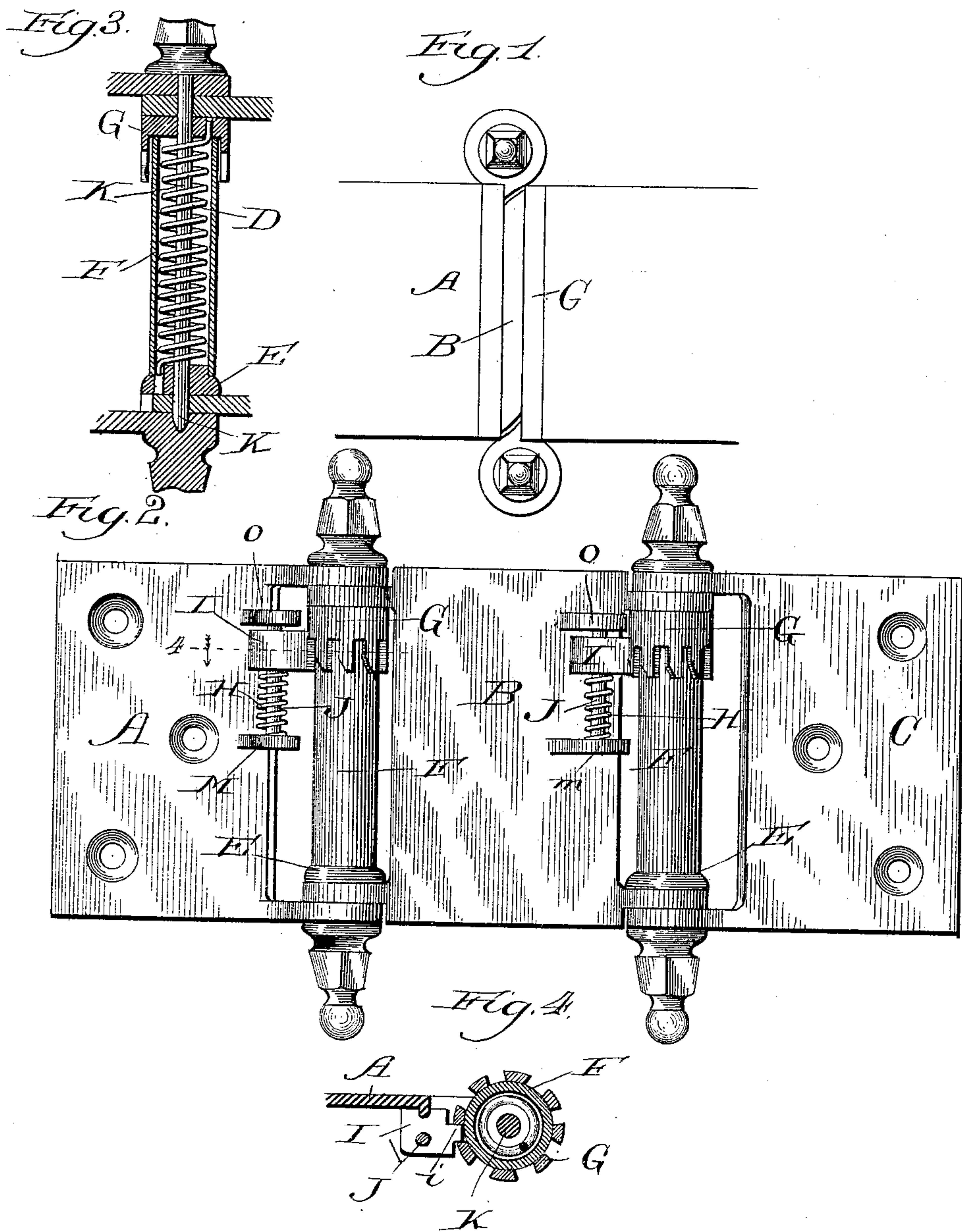
(No Model.)

D. NICKEL.

SPRING HINGE.

No. 350,208.

Patented Oct. 5, 1886.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

DAVID NICKEL, OF MORRIS, ILLINOIS.

## SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 350,208, dated October 5, 1886.

Application filed July 6, 1886. Serial No. 207,248. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID NICKEL, a citizen of the United States, residing at Morris, Illinois, have invented certain new and useful Improvements in Spring-Hinges, of which the following is a specification.

The object of my invention is to make a spring-hinge in which the tension of the spring may be increased from time to time and automatically locked or held at any desired degree of tension; and my invention consists in the features and details of construction hereinafter described and claimed.

In the drawings, Figure 1 is a top view of my improved hinge. Fig. 2 is a front elevation of the same. Fig. 3 is a longitudinal sectional view taken through the center of the spring-inclosing barrel, showing the spring and the pintle or retaining-pin; and Fig. 4 is a top view taken across the parts at 4 in Fig. 2.

As shown in the drawings, my improvement is applied to a three-leaf hinge, or one in which the door or gate may be opened in either direction, though it is obvious that it can be applied with equal ease and advantage to a two-leaf hinge.

In the drawings, A, B, and C are respectively three leaves of a hinge. D is the tension-spring; E, the seat or piece in which the lower end of the spring is placed; F, the spring-inclosing barrel or case; G, the toothed cap or piece placed over the upper end of the spring and its case; H, an auxiliary spring; I, a block or clutch with a tongue or extension, *i*, which engages with the teeth on the cap G, and which is held in such engagement by the spring H.

J is a pintle or rod, around which the spring H is coiled, and on which the clutch or block I is held, and up and down which it moves; and K is the retaining rod or pintle, by which the parts of the hinge are pivoted and held together.

In making my improved hinge I make the leaves with the usual ears, lugs, or projections, by which they may be pivoted or fastened together. These ears or lugs fit one within the other in the usual way, and as shown in the drawings. They are provided with holes, through which a retaining rod or pivot, K, may be inserted, though the leaves of the hinge may

be pivoted or riveted together in other ways, if desired. Immediately on the inside of the inside ears of the leaves I place blocks or pieces E and G. The lower one of these pieces, E, is fixed or made irrevoluble, and is preferably smaller at its upper end than at its lower, and provided with an abrupt shoulder or enlargement, as shown in Fig. 3. If desired, it may be cast as a part of the ear or lug of the hinge-leaf, instead of being made as a separate piece. The upper one of these pieces, G, is made revolvable, and is hollowed out for a portion of its length and provided with a series of teeth sloping somewhat from one side. This will be plain from a reference to the drawings. Each of these pieces E and G is provided with a hole, in which the end of the spring may be inserted to retain it in place, as hereinafter described. A spring-retaining barrel or case, F, is made of the proper length to fit between the pieces E and G, encircling the upper end of the piece E and fitting against its shoulder or enlargement, and having its upper encircled or inclosed by the piece G. This barrel or case contains a spring, D, whose ends project and fit into the holes in the pieces E and G. The spring-retaining case, with its spring in place, is fitted onto the block E and into the block G, with the ends of the spring placed in the holes in such pieces, and the whole is then placed between the inner ears or lugs of the leaves, and the rod K, when that method of fastening is adopted, inserted in place. This fastens the leaves of the hinge together, with the spring-barrel, spring, and pieces E and G in their proper position. In one of the leaves of the hinge are preferably cast or attached two projections or lugs, M and O, between which is placed a rod or pintle, J. A coiled spring incloses this rod and a block-piece or clutch, I, is placed at its upper end, resting upon the spring and movable up and down on the rod. In placing this piece I onto the rod J the spring H should be sufficiently compressed to exert a tension or pressure against it, so as to constantly push it up as far as possible. The side of this piece I adjacent to the piece G is provided with a narrowed portion adapted to engage with the teeth on the piece G. As the piece G is turned, the piece I will be pushed



down by the inclined portions of the teeth on the piece G, so that they may pass the piece I in one direction. Owing to their being made without any slant on the other side, the teeth of the piece G are held and prevented from turning in the other direction. Every time the piece I is pushed down against the spring by the sloping sides of the teeth on the piece G it is pushed up again the moment the tooth is passed, so as to be forced into each of the notches or spaces between the teeth as they are severally reached while the piece G is turned in one direction.

While I have described the clutch I as being moved or pushed into the spaces between the teeth by a coiled spring mounted on a pintle, I do not wish to limit myself to this kind of a spring or arrangement, as any kind of a spring, or even a weight, to force the clutch back into engagement with the teeth of the revoluble piece G will answer the purpose. It will be seen that the teeth of the piece G are automatically engaged with the narrowed edge or tongue on the piece I, and that the piece G is automatically locked as to one direction by the piece I after every tooth is passed. The piece G may be turned by the point of a screw-driver or any other instrument which may be inserted between the teeth, so as to afford a leverage to force it around, or by any other convenient means. As it turns, it carries the end of the spring which was inserted in the hole in it around with it, so as to more tightly coil the spring and increase its tension. The farther around it is turned the tighter will be the coiling of the spring and the greater will be its tension. With the passage of each tooth, however, past the piece I the piece G will be automatically locked and prevented from uncoiling the spring. In this way the spring may have its tension increased from time to time, or from year to year, as may be desired. By having the upper end of the spring-case F inserted within the piece G, and by having its lower end inclose or encircle the top of piece E, as shown in the drawings, the spring will be protected fully from rain or other sources of dampness, so that its strength and elasticity will not be liable to be impaired by rust or other injurious means, and when one spring has become useless or worn out the pieces may be taken apart and a new spring inserted without any considerable trouble or expense.

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

1. In spring-hinges, the combination of

leaves of suitable form pivotally connected together, a spring coiled around the axis of such leaves and having one of its ends attached to a fixed part of the hinge and its other end attached to a revoluble part of the hinge, by which its coils may be tightened and its tension increased, such revoluble part being provided with teeth inclined on one side, an auxiliary spring located outside of the axis of the hinge, and a clutch connected therewith and movable against or from the tension of the spring, engaging at one side with the teeth on the revoluble piece of the hinge, and movable by the inclined sides of the teeth out of and by the spring into the notches or spaces between such teeth, substantially as described.

2. In spring-hinges, the combination of leaves of suitable form pivotally connected together, a spring coiled around the axis of such leaves, inclosed in a case or barrel, and having one of its ends attached to a fixed part of the hinge and its other end attached to a revoluble part of the hinge, by which its coils may be tightened and its tension increased, such revoluble part being provided with teeth inclined on one side, an auxiliary spring located outside of the axis of the hinge, and a clutch connected therewith and movable against or from the tension of the spring, engaging at one side with the teeth on the revoluble piece of the hinge, and movable by the inclined sides of the teeth out of and by the spring into the notches or spaces between such teeth, substantially as described.

3. In spring-hinges, the combination of leaves of suitable form pivotally connected together, a spring coiled around the axis of such leaves and having one of its ends attached to a fixed part of the hinge and its other end attached to a revoluble part of the hinge, by which its coils may be tightened and its tension increased, such revoluble part being provided with teeth inclined on one side, a coiled spring mounted on a pintle outside of the axis of the hinge, and a clutch mounted on such pintle and movable thereon against or from the tension of the spring, engaging at one side with the teeth on the revoluble piece of the hinge, and movable by the inclined sides of the teeth out of and by the spring into the notches or spaces between such teeth, substantially as described.

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