

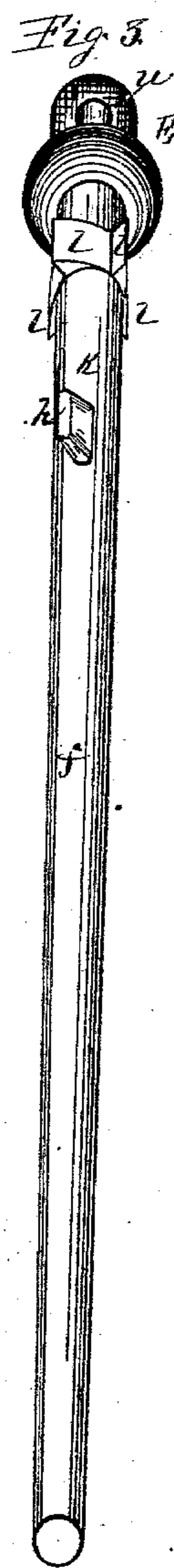
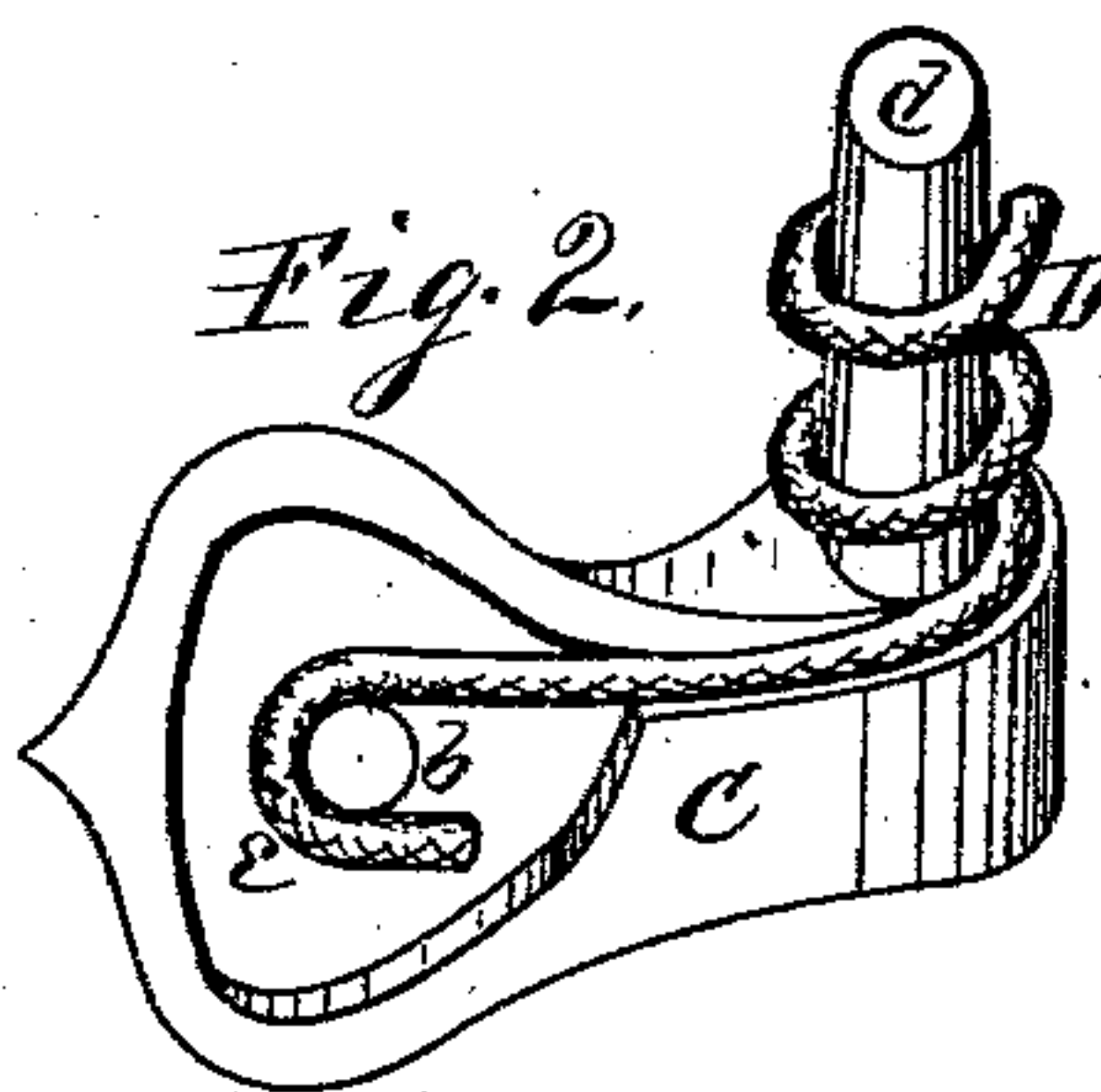
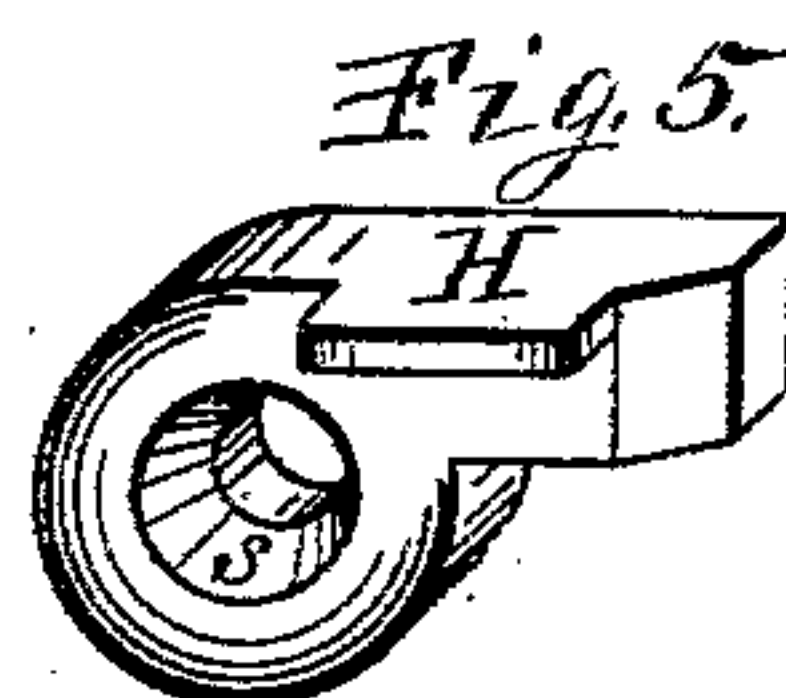
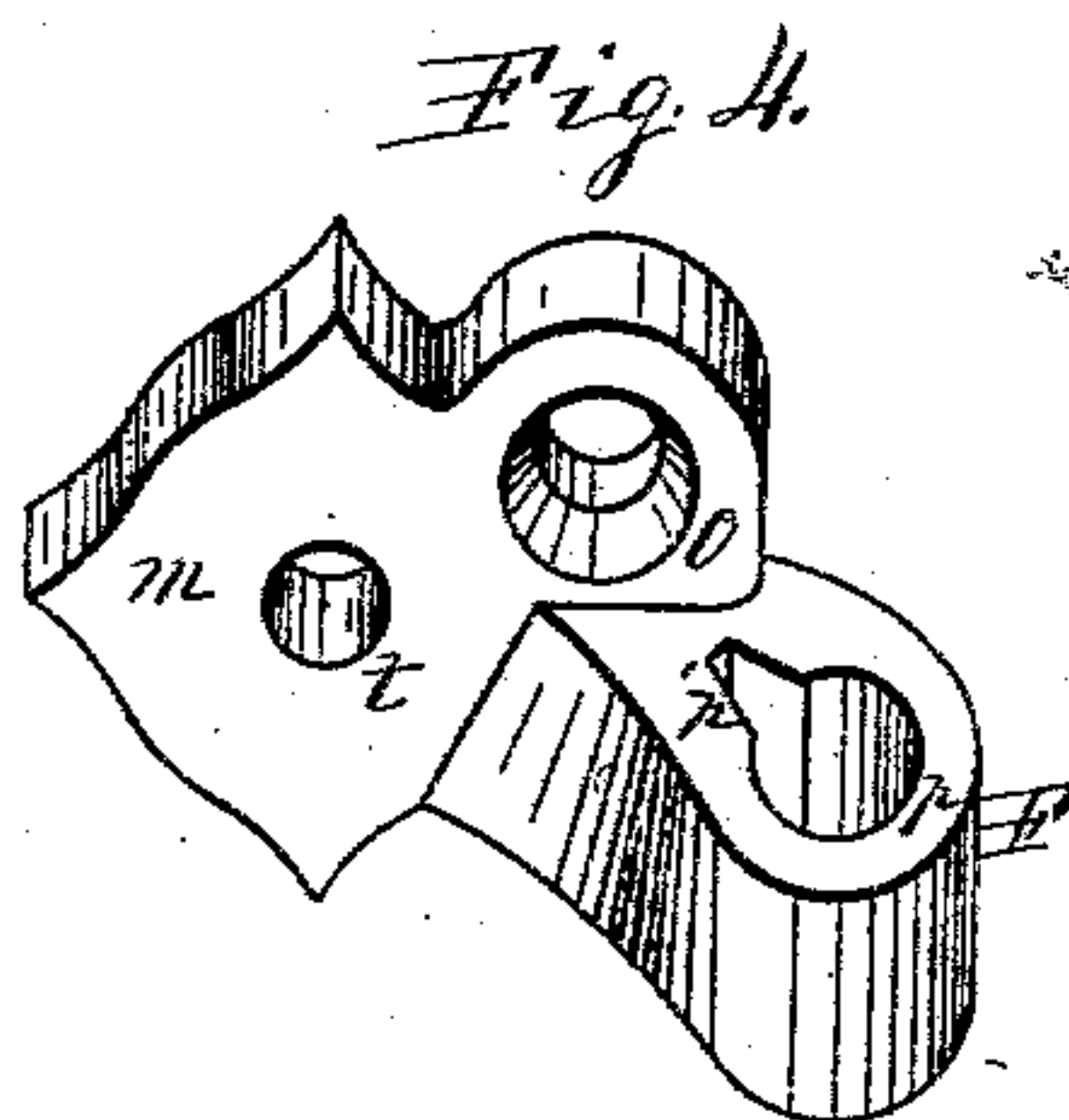
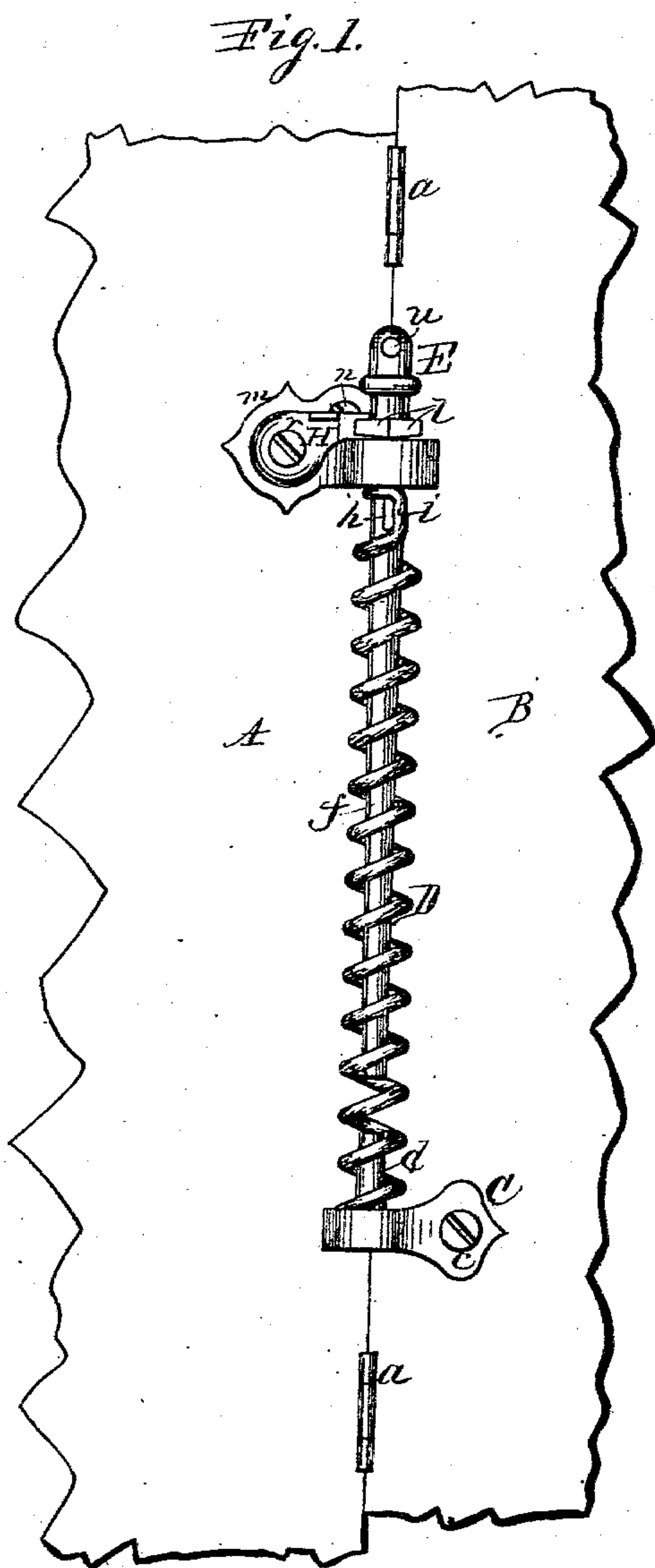
(No Model.)

I. B. LOCKWOOD.

DOOR SPRING.

No. 246,323.

Patented Aug. 30, 1881.



Witnesses.
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UNITED STATES PATENT OFFICE.

ISAAC B. LOCKWOOD, OF ROCKFORD, ILLINOIS.

DOOR-SPRING.

SPECIFICATION forming part of Letters Patent No. 246,323, dated August 30, 1881.

Application filed April 15, 1881. (No model.)

To all whom it may concern :

Be it known that I, ISAAC B. LOCKWOOD, a citizen of the United States, residing in the city of Rockford, in the county of Winnebago and State of Illinois, have invented a new and useful Door-Spring, of which the following is a specification.

My invention relates to improvements in door-springs in which a spiral spring is employed to close the door, and its construction, application, and operation will be hereinafter fully described.

In the accompanying drawings, Figure 1 represents my improved spring, in elevation, in position on a door. Fig. 2 is an isometrical inner face representation of its foot portion. Fig. 3 is an isometrical representation of the shaft or spindle. Fig. 4 is an isometrical outer face representation of the upper bearing of the spindle. Fig. 5 is an isometrical outer face representation of the detent or pawl.

In the figures, A represents a portion of a door jamb or casing, and B a portion of a door supported on the jamb, having a hinge-joint connection therewith by means of suitable hinges, *a*, employed to fix the door to the jamb in the usual manner. On these parts my improved spring is represented in position immediately over their vertical hinged joint.

The foot portion of my improved spring consists of a suitable bracket-formed portion, C, having its bed-plate portion fitted to engage the outer face of the door, and provided with an opening, *b*, to receive a screw, *c*, to fix it in position on the door.

At *d* is represented a spindle-stud, which rises from the upper surface of the free end of the foot-bracket C, and is designed to enter the foot portion of the spring, to give it position on the bracket. The under or inner surface of the foot-bracket is recessed in such a manner as to receive the free end of the foot portion of the spring.

At D is represented a coiled spring, produced from spring-wire in the usual manner, having the free end of its foot portion bent in the proper form, as represented at *e*, to enter the recessed portion of the foot-bracket and engage the screw employed to fix the foot-bracket in position, while the stud-like spindle engages the foot portion proper of the coiled spring.

At E is represented a spindle, the shaft portion *f* of which is of proper size to freely enter the coiled spring from its upper end, and it is fitted with a stud, *h*, projecting radially from the side of its upper end portion, adapted to receive a loop, *i*, formed in the upper free end of the coiled spring. The portion *k* of the spindle immediately above the stud *i* is designed as its bearing portion, to be supported in a suitable bearing. This spindle is fitted, above the bearing portion *k*, with ratchet-teeth *l*, projecting outward therefrom, in this instance on opposite sides and at equal quarter-spaces, and are designed to engage a suitable pawl to prevent the spindle turning in its bearing by the action of the spring.

At F is represented the upper bearing of the spindle, which is of the peculiar bracket form represented in the drawings, consisting of the plate-like portion *m*, fitted to rest against the jamb, to which it is fixed by means of a screw, *n*, inserted in a hole, *o*, provided to receive it. The free end of this bracket is provided with a bearing, *p*, to receive the bearing portion of the spindle, and one side thereof is provided with a radial enlargement, *p'*, to permit the stud *h* of the spindle to pass freely through it until the ratchet-teeth portion rests on the upper surface of the bearing portion of the bracket.

At H is represented a pawl pivoted to the plate portion of the upper bracket-bearing by means of a screw, *r*, entering the hole *s* in the pawl, and passing through the hole *t* in the bracket-bearing and entering the jamb, and operates to hold the pawl in pivotal connection with the bracket in position to engage the ratchet-teeth of the spindle, and also aiding to support the bracket in position on the door. The upper end of the spindle is provided with a hole, *u*, designed to receive the end portion of a suitable lever employed to turn the spindle. These several parts, constructed as herein shown and described, are placed in position on the door, as represented in Fig. 1, which can be readily accomplished by first placing the foot-bracket in the foot portion of the spring, and then fixing the bracket in position by means of the screw passing through its plate portion. The spindle is then put in position in its bearing of the up-

per bracket-support, and is then inserted into the coils of the spring from its upper end, and the stud projecting from its side is made to engage the loop in its upper end. The bracket
5 is then fixed in position by means of a screw passing through its plate portion. The pawl is then fixed in position on the plate of the bearing by means of a pivot-screw, and its free end engages the ratchet-teeth of the spindle.
10 Then, by means of a suitable lever to engage the hole in the upper end of the spindle, it may be turned in either direction to regulate the action of the spring to properly operate the door.
15 It will be observed that in the application of my improved spring, as in the application of similar springs, the axial center of the spindle and the axial center of hinge-joint of the door will not always be in the same vertical line. This difference arises from the variation in the size of hinges employed, and from the variations in the thickness of doors, and when such differences arise it will be seen
20 that in operating the door there will be an inclined action of the spindle, the upper end of which will move in a circle having a radius equal to the horizontal distance between the axial centers of the door-hinges and the spindle, which, when the spindle is in one piece, is
25 liable to cramp in its bearings, and when this variation is large will operate to bend or break the spindle or otherwise injure the spring, all

of which is obviated by my improved spring, in which the spindle is in two parts, permitting of a free action of the parts without injury. 35

By this construction of the several parts I am enabled to produce them in proper form for use without other finishing than that commonly required of ordinary castings, and dispense with machine-work in fitting them for use or for the trade, and produce a reliable adjustable spring at a small cost. 40

I claim as my invention—

1. The combination, with the spindle-bearing provided with a recess at its side, of a spindle having a stud for the attachment of one end of a spring, a ratchet located above the stud, and a smooth bearing portion between the ratchet and stud, substantially as set forth. 45 50

2. The combination, with the lower bracket provided with a short stud or spindle, and a spiral spring having its lower end secured to said bracket, of an upper bracket having a pawl pivoted thereto, and a spindle provided with a stud for the attachment of the upper portion of the spiral spring, and furnished with ratchet-teeth for the engagement of said pawl, substantially as set forth. 55

ISAAC B. LOCKWOOD.

Witnesses:

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