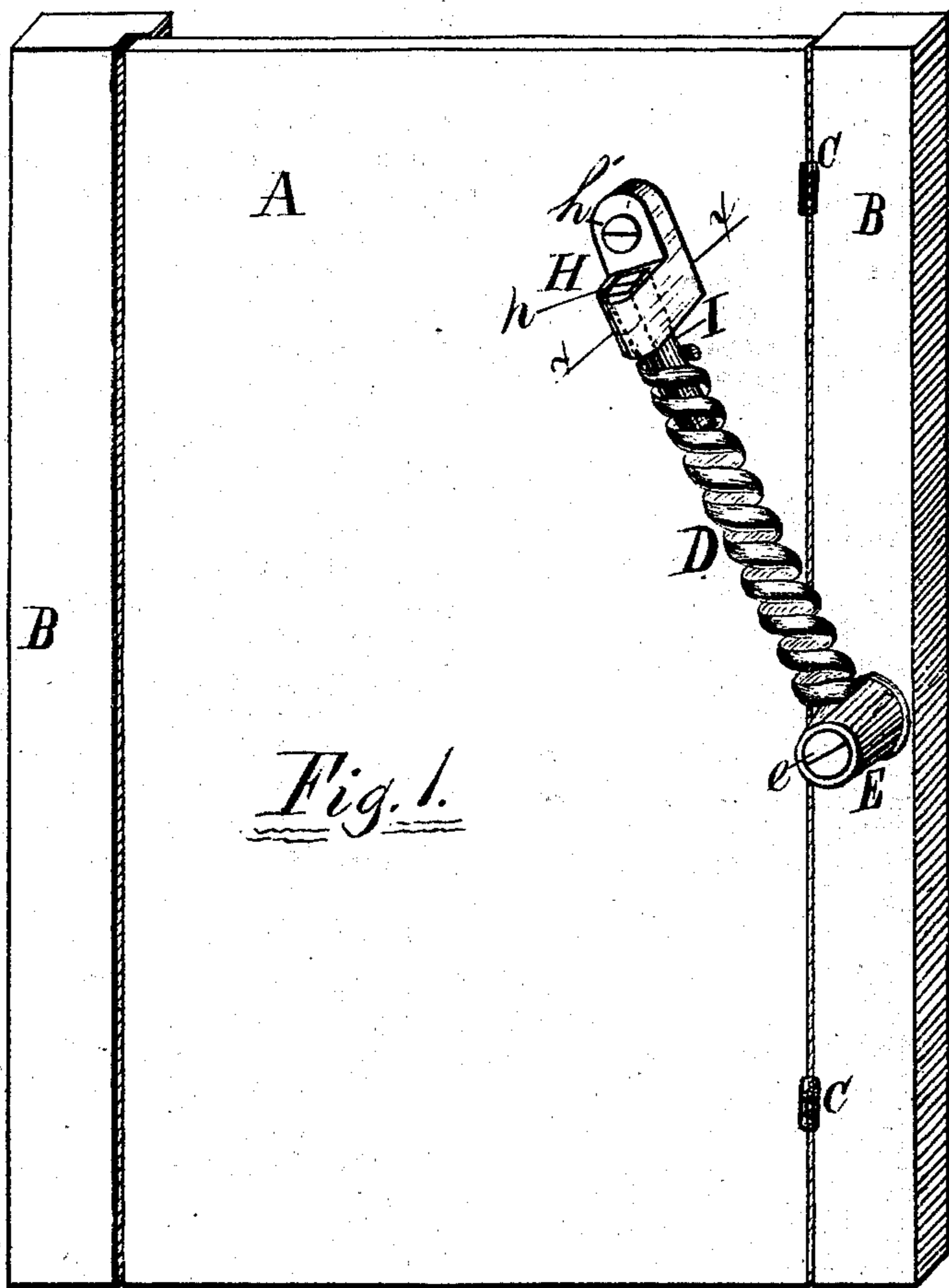
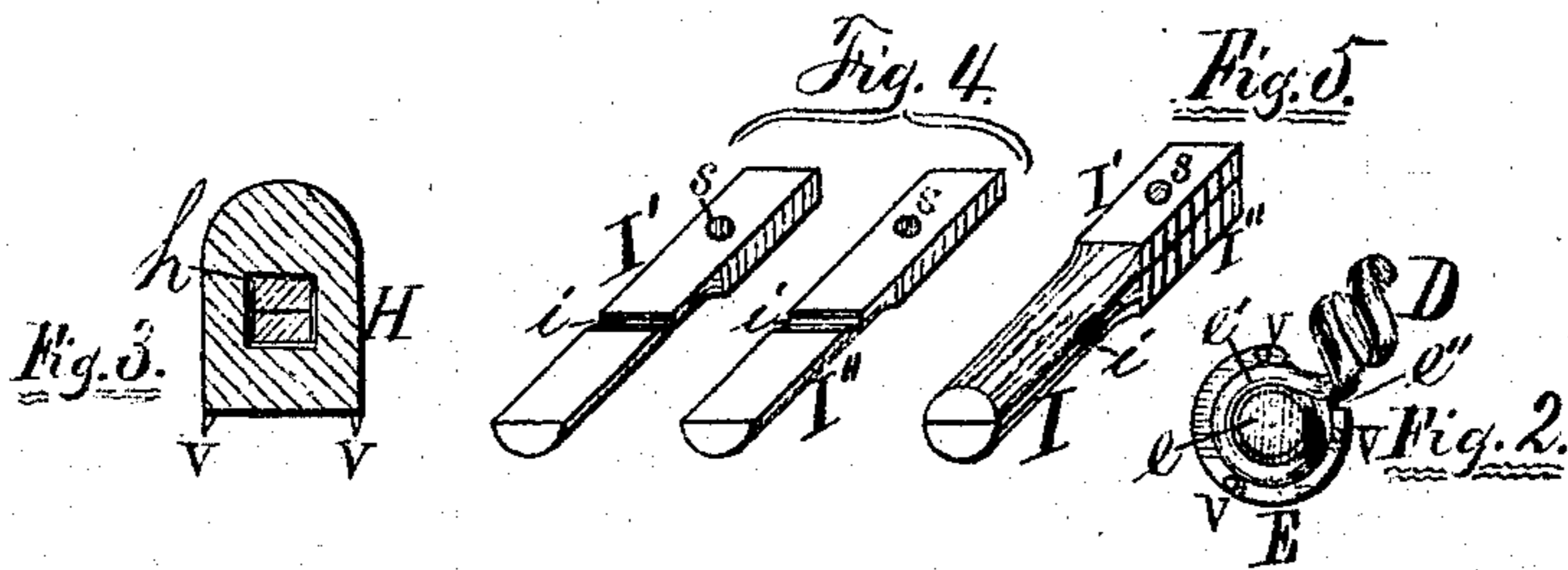


*Door-Spring.*

PATENTED JUL 11 1871

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Witnesses:  
F. G. Greeley.  
C. W. Robinson

Inventors,  
Alonzo S. Boon & Lucien Mills.  
by W. B. Richards,  
their Atty.

# UNITED STATES PATENT OFFICE.

ALONZO T. BOON AND LUCIEN MILLS, OF GALESBURG, ILLINOIS, ASSIGNORS TO  
THEMSELVES, FRANK HUGHES, AND W. S. DEWEY, OF SAME PLACE.

## IMPROVEMENT IN GATE AND DOOR-SPRINGS.

Specification forming part of Letters Patent No. 116,800, dated July 11, 1871.

*To all whom it may concern:*

Be it known that we, ALONZO T. BOON and LUCIEN MILLS, of Galesburg, county of Knox and State of Illinois, have invented certain Improvements in Door and Gate-Springs, of which the following is a specification:

Our invention has for its object to furnish a cheap, simple, and efficient spring for opening or closing doors and gates; and the invention consists in securing one end of the coil or spiral spring within a cylindrical plate, and the other end by passing it through a grooved sectional bar, one end of which is made square and passed into a corresponding square slot formed in a metal plate secured to the gate or door, so that the coil may be readily removed from the door without removing the fixed plates, as hereinafter more fully set forth.

Figure 1 is a perspective view of a door, showing our invention in working position. Fig. 2 is a bottom view of the lower attaching device, showing the manner of securing the end of the spiral spring therein. Fig. 3 is a cross-section of Fig. 1 on the line *x x*. Figs. 4 and 5 are detached views of the plates attached to the upper end of the spiral spring.

A is the door; B, the door-frame; C C, the hinges by which the door is hung in the frame. D is a spiral spring. E is a cylindrical-shaped plate with a hole centrally and longitudinally through it, through which a screw, *e*, is inserted for the purpose of securing it to the door-frame B next to the hinged side of the door A. The lower side—or side next the door-frame—of the plate E, is provided with an annular groove, *e'*, in which the lower end of the spiral spring D is curved and laid, passing out through a recess, *e''*, in the outer flange, as plainly shown at Fig. 2.

This arrangement for securing the lower end of the spiral spring to a gate or door is effectual and simple, and with it the person using the gate or door may easily, without any tools except a screw-driver, substitute a new spring for a weakened old one—a thing impossible with the ordinary plates and method of attaching the spiral spring thereto.

H is a metal plate, with a hole pierced in its

upper end, through which a screw, *h'*, is inserted for the purpose of securing it to the door A near the hinged side, as shown in the drawing. The lower end of the plate H is enlarged, as shown, and pierced with a square hole, *h*, the axis of which is in a direction pointing toward the plate E. I is a metallic bar, round in its cross-section about one-half of its length and square the other half. The bar I is composed of two longitudinal sections or halves, I' I'', as shown at Figs. 4 and 5, each half having a transverse groove, *i i*, on its face adjacent to its fellow, which grooves form, when the plates I' I'' are brought together, a circular hole through them. The plates I' I'' are also pierced with holes S S for purposes hereafter described.

The operation of our invention is as follows: The plate H is attached to the door. The plate E is attached to the side frame B, securing thereby the lower end of the spring D. The halves of the bar I are now put together, with the upper end of the spring D, which is bent across the center of the spiral, resting in the hole *i* and the cylindrical part of bar I projecting into the hollow spiral, as shown at Fig. 1. A rivet through the hole S now secures the bar I firmly to the spring D. The spring is now strained in a direction with its spiral twist and the square end of the bar I is then inserted in the square hole in the plate H, in which position it will operate to close the gate or door. By turning the spiral spring on a strain opposite to its twist it will tend to open doors and gates.

V V V V are studs on the plates E and H, for the purpose of holding them secure to the wood of door and frame.

We claim—

In combination with the coil D, the fixed-plate E having the annular groove *e'* and recess *e''*, the removable plates I' I'' having grooves *i i*, and the slotted plate H, substantially as and for the purpose specified.

ALONZO T. BOON.  
LUCIEN MILLS.

Witnesses:

W. S. DEWEY,  
H. W. CARPENTER.