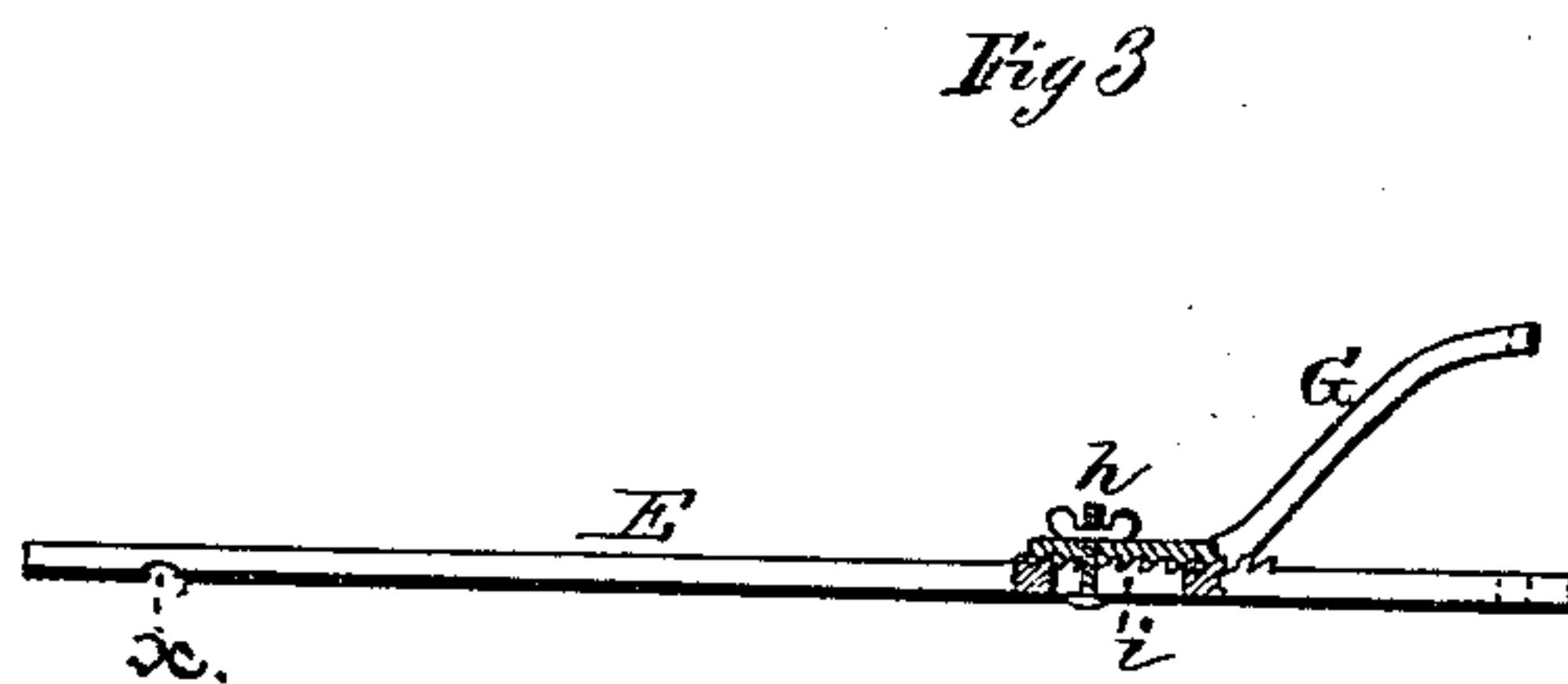
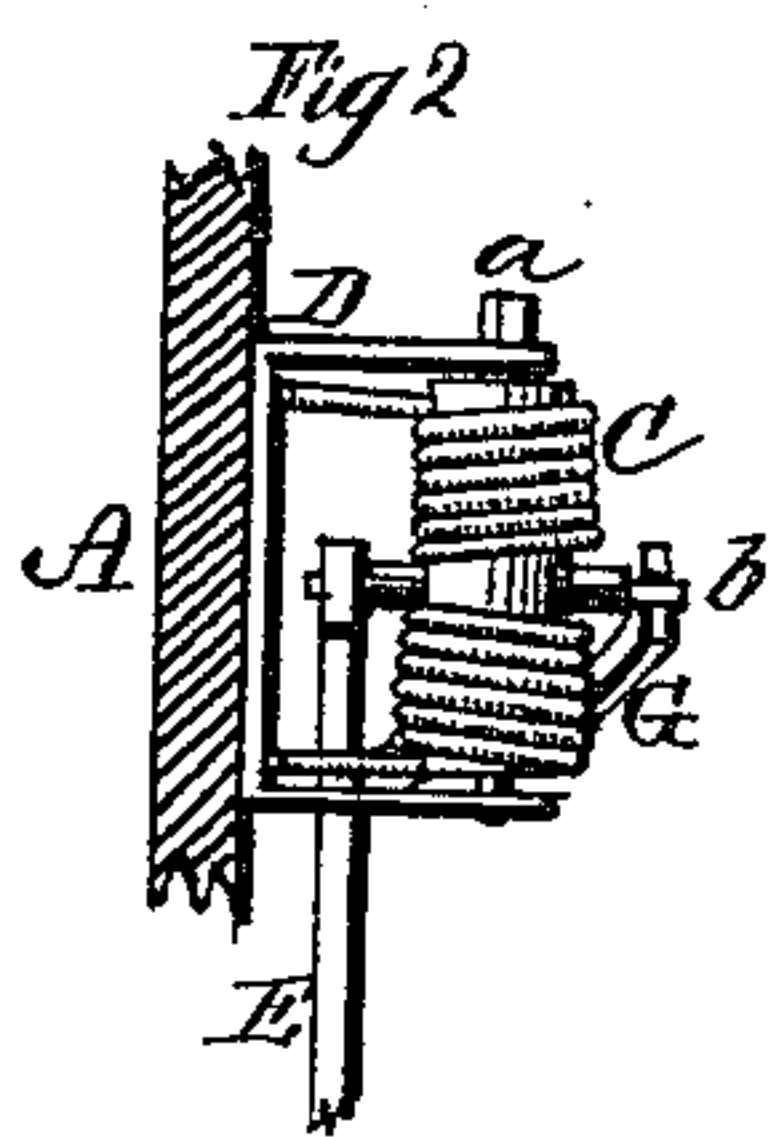
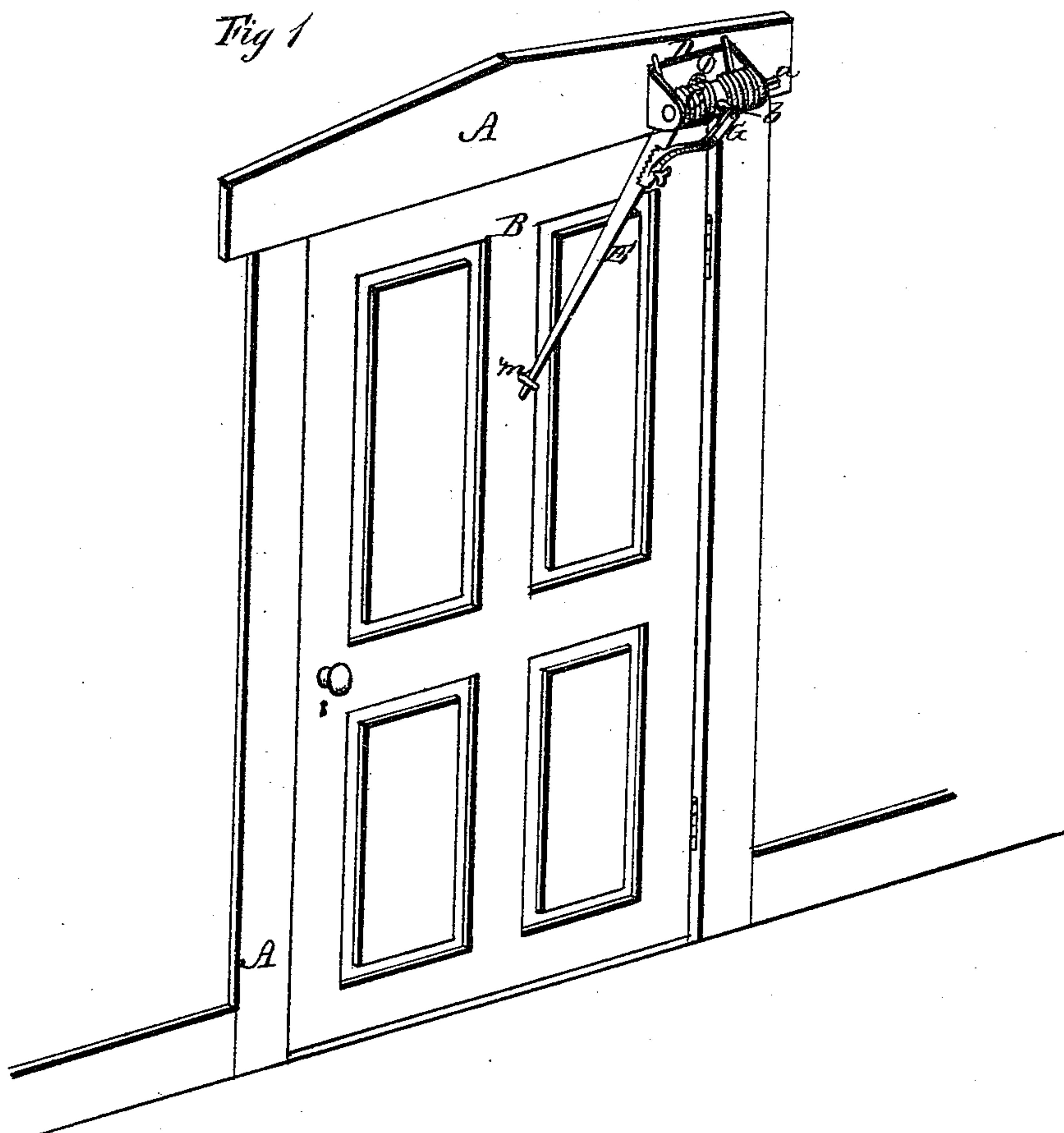


J. B. STARKWEATHER.

Door-Spring.

No. 165,626.

Patented July 13, 1875.



WITNESSES

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By

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# UNITED STATES PATENT OFFICE.

JOHN B. STARKWEATHER, OF WINONA, MINNESOTA, ASSIGNOR OF PART OF HIS RIGHT TO C. A. BIERCE, J. H. JENKINS, AND FRANK A. JOHNSTON, OF SAME PLACE.

## IMPROVEMENT IN DOOR-SPRINGS.

Specification forming part of Letters Patent No. 165,626, dated July 13, 1875; application filed March 29, 1875.

*To all whom it may concern:*

Be it known that I, JOHN B. STARKWEATHER, of Winona, in the county of Winona and in the State of Minnesota, have invented certain new and useful Improvements in Door-Springs; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My invention relates to that class of door-springs in which a box having a shaft containing a spring is attached to the door-frame, and from which shaft depends a lever, which is placed against the door, or against a projection extending from the same; and it consists in the spring bent to form a central loop, two coils, and two arms, held on a shaft in a bracket, in combination with a cross-pin and a lever having an adjustable arm, all as more fully hereinafter set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a perspective view of a door with my spring applied thereto. Fig. 2 is a plan view of the door-spring with its attachments. Fig. 3 is a view of the adjustable arm, and Fig. 4 is a view of the spring itself.

A represents an ordinary door-frame, with door B hinged therein. On the upper part of the frame A is secured a metal frame or bed, D, in which is held a horizontal shaft, *a*, provided with a central pin, *b*, passing through it at right angles, said parts being so arranged that the pin *b* will be in the same vertical plane as the hinges of the door, or as near thereto as possible. One end of the shaft *a* is made square, so that a key or wrench may be applied thereto for regulating the tension of the spring C. This spring is a double spiral spring, made of a single piece of wire, bent in the middle to form a loop, *d*, and then coiled to form the springs *f f*, with arms *e e* projecting at the ends.

The double spring C is placed on the shaft *a*, with the loop *d* under the inner end of the pin *b*, and the arms *e e* extending from underneath upward against the back of the metal frame D.

On the inner end of the pin *b* is placed a bar or rod, E, which has a bent arm, G, adjustably connected to it by means of a bolt, *h*, passing through a slot, *i*, in the bar, and the adjoining surfaces of the bar or adjustable arm toothed or serrated, as shown in Fig. 3, so as to prevent the adjustable arm from slipping thereon.

The upper end of the arm G has a notch, in which the outer end of the pin *b* rests, the tension of the spring holding the pin in said notch.

The rod or bar E extends diagonally across the door B when closed, and the lower end of the rod is inserted in an eye-screw, *m*, fastened in the door.

It will readily be seen that the double spring C, operating through the pin *b* on the bar E, holds the door closed. In opening the door there is a point when the door is standing at right angles that the action of the spring tends to hold the door in that position. To render this action of the spring more certain, the lever or bar E is, near its lower end, provided with a notch, *x*, which, just at that point, catches on the eye-screw *m*. The least movement of the door from this point, in either direction, will cause the spring and lever to either close the door or fully open the same.

I am aware that a lever operating on a door by the action of one or more springs is not, broadly, new, and I do not, therefore, claim such as being my invention.

With my construction of the parts, the greatest pressure of the spring is when the door is closed, or when fully open.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The wire spring C, bent to form the central loop *d*, coils *f*, and arms *e e*, held in the frame D, in combination with the shaft *a*, central transverse pin *b*, lever E, with or without the notch *x*, and adjustable arm G, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 20th day of February, 1875.

Witnesses: J. B. STARKWEATHER.  
GEORGE GALE, Jr.,  
C. A. BIERCE.