2 Sheets—Sheet 1.

G. GEER.

SPRING-HINGE.

No. 193,157. Patented July 17, 1877.

Fig. 1.

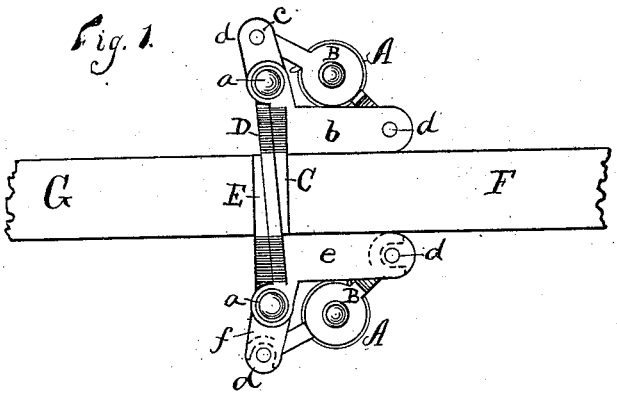
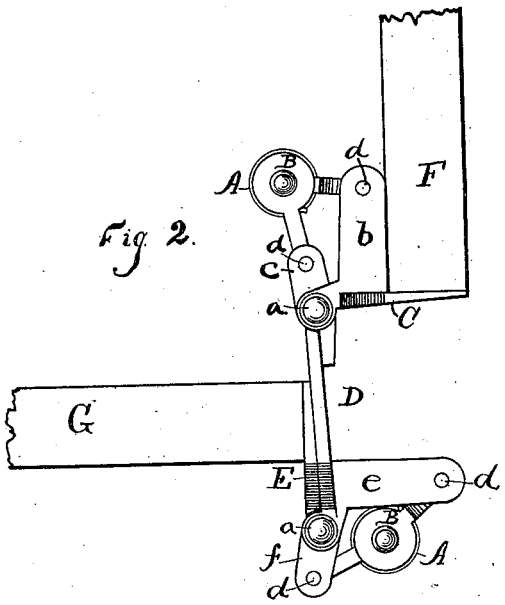


Fig. 2.



Witnesses.
H. N. Gabe.
Nettie Shepard.

Inventor.
George Geer
By James Shepard Atty.

2 Sheets—Sheet 2.

G. GEER.

SPRING-HINGE

No. 193,157. Patented July 17, 1877.

Fig. 3.

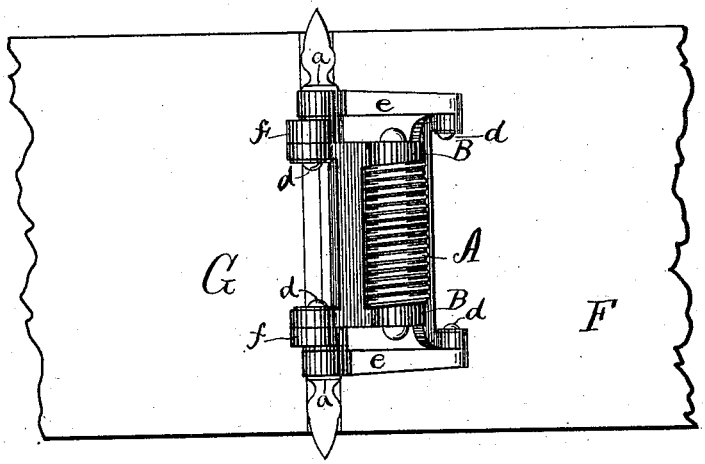
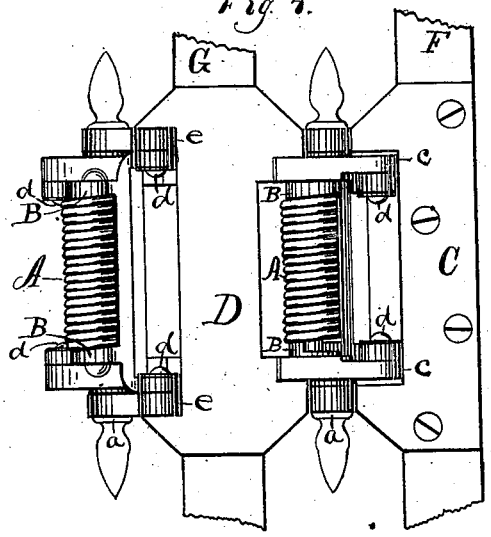


Fig. 4.



Witnesses.
H. P. Gale.
Nettie Shepard.

Inventor.
George Geer
By James Shepard Atty.

UNITED STATES PATENT OFFICE.

GEORGE GEER, OF UNIONVILLE, CONNECTICUT.

IMPROVEMENT IN SPRING-HINGES.

Specification forming part of Letters Patent No. 193,157, dated July 17, 1877; application filed April 17, 1877.

To all whom it may concern:

Be it known that I, GEORGE GEER, of Unionville, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Spring-Hinges, of which the following is a specification:

My invention consists in the novel combination of hinge-leaves, provided with projecting arms, a toggle-frame, and spring, as hereinafter more fully described and claimed.

In the accompanying drawing, Figures 1 and 2 are plan or top views of a spring-hinge which embodies my invention. Fig. 3 is a front elevation of the same, as viewed from one side of the door; and Fig. 4 is a side elevation of the same, represented as opened and showing the edges of the door and frame.

A designates a spiral-wire spring, seated at its ends upon hubs of the toggle-frame B, and surrounding the joint of said frame, one hub being formed upon one-half of the said frame, and the other hub upon the other half. At each end of the spring there is an arm, which bears, respectively, upon the two halves of the toggle-frame B.

The parts so far described are substantially the same as the spring and toggle-frame shown and described in my door-spring patent, No. 136,371, dated March 4, 1873.

C D E designate the leaves of a three-leaf hinge for swinging a door in either direction in a well-known manner, the knuckles or pintle-joints of said leaves being designated by the letter *a*. The leaf C is provided at each end with an arm, *b*, Figs. 1 and 2, which arm stands at right angles to the body of said leaf, and in case it is secured to the door F, as represented in the drawing, said arm *b* will rest against the side of the door. Upon the side of the middle leaf D, to which the leaf C is hung, there is a short arm, *c*, at each end, as shown in Figs. 1, 2, and 4.

It should be observed that the arms upon one leaf are set nearer together from end to end than are the arms upon its fellow leaf, so that they may shut by each other and not interfere with the operation of the hinge proper.

The arms *b b* and *c c* are each provided with a pin or pintle, *d*, preferably provided with a friction-collar, and the outer ends of the frame B are slotted, so that they may be slipped upon said pintles, the elasticity of the spring preventing them from slipping off. The slotted ends of the frame B and the friction-collar are indicated by broken lines in the lower half of Fig. 1. One-half of the frame B is made of such length from the outside of one arm to the outside of the other arm as to fit in between the arms *b b* of the leaf C, and the other half is made in like manner to fit in between the arms *c c* of the leaf D. The two halves of the toggle-frame B are forced together in such a direction as to press against the spring A, and are then slipped upon the pintles *d d* of the arms *b b* and *c c*, when the expansive power of the spring A will continually press the ends of the frame against the said arms of the leaves to which said frame is attached.

When the door F is opened in the direction indicated in Figs. 2 and 4 the middle leaf D acts the same as though it were rigidly fastened to the frame G, and the halves of the toggle-frame are brought toward each other, thereby compressing the spring A until the pintles *d d* come into a line with each other and the hinge-pintle *a*, at which point the spring is pushing against the dead-center. The expansive force of the spring before reaching this point has a tendency to close the door, because the pintles *d d* have been gradually approaching each other, and compressing the spring, but so soon as the door is swung backward a little beyond the point last described the expansive power of the spring has a tendency to farther open the door and hold it open, because when moving in this direction, after passing the dead-center, the pintles *d d* move away from each other, and the power of the spring is continually bearing against said pintles. In bringing the door back again to close it the arms and spring are again compressed until they pass the dead-center, when they again expand as the door closes, and take the position shown in Fig. 1. In this position the halves of the toggle-frame are nearly straightened, so that at this point the door is held firmly closed, although the spring has expanded to its fullest limit.

I have now described the operation of one side only, and by providing the leaf D with

proper screw-holes, and cutting off or omitting the parts which connect it with the leaf E, a single-action spring-hinge would be formed. In practice, both single and double acting hinges may be made as required. I form upon the middle leaf D a right-angled arm, *e*, at each end, and the leaf E I provide with a short arm, *f*, all of which are provided with the pintles *d*, and receive the arms of the toggle-frame in the manner already described, and they come into operation when the door is opened in the opposite direction from that before described.

I have herein specified a spiral-wire spring, which I prefer to employ, but the same arrangement of hinge, toggle-frame, and spring may be easily made with a sheet-steel or other spring substituted for the spring A, and that without changing the essential features of my invention.

I have also shown the leaf C as secured to the door, but the hinge might be reversed in position, and the said leaf secured to the frame.

I claim as my invention—

In a spring-hinge, the leaves provided with projecting arms in combination with the toggle-frame and spring, substantially as described, and for the purpose specified.

GEORGE GEER.

Witnesses:
EDWARD MCGRAW,
MARTIN COWLES.