(Model.)

G. W. WARNER.

SPRING HINGE.

No. 304,380. Patented Sept. 2, 1884.

Fig. 1.

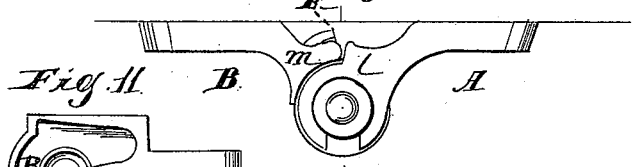


Fig. 11.

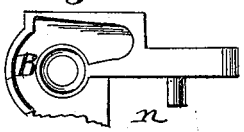


Fig. 2.

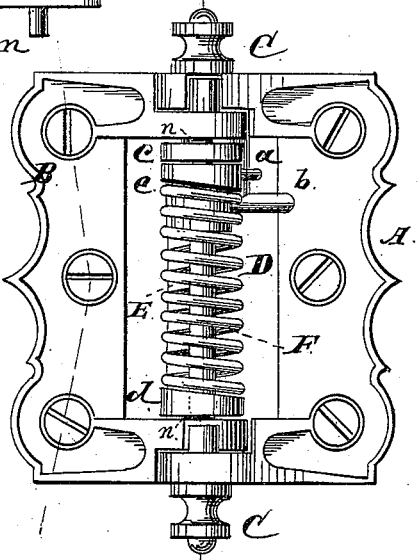


Fig. 3.

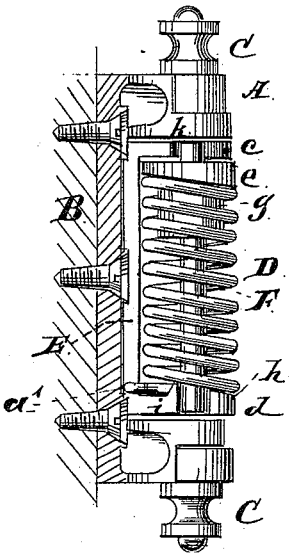


Fig. 5.

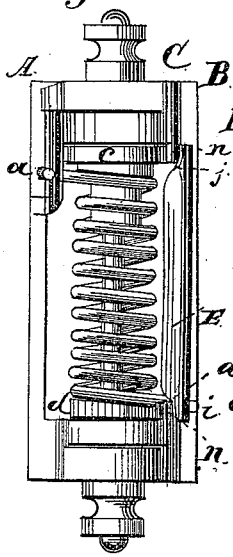


Fig. 4.

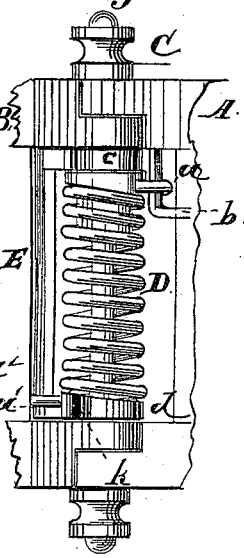


Fig. 6.

Fig. 7.

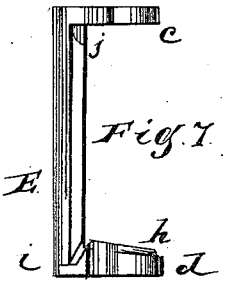


Fig. 8.

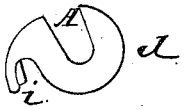


Fig. 9.

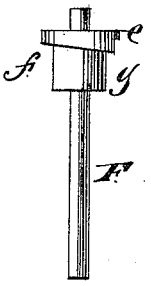
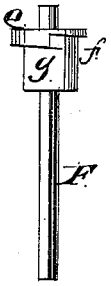


Fig. 10.



Witnesses:
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Albert H. Adams.

Inventor:
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By West & Bond.
His Attys.

UNITED STATES PATENT OFFICE.

GEORGE W. WARNER, OF FREEPORT, ILLINOIS.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 304,380, dated September 2, 1884.

Application filed January 12, 1884. (Model.)

To all whom it may concern:

Be it known that I, GEORGE W. WARNER, residing at Freeport, in the county of Stephenson and State of Illinois, and a citizen of the United States, have invented certain new and useful Improvements in Spring-Hinges, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is an end view; Fig. 2, a face or plan view; Fig. 3, a side view with one of the leaves in section on the dotted lines of Fig. 2; Fig. 4, a plan view with the leaves partly broken off and folded at about the line of the neutral action of the spring; Fig. 5, an under or back view with the leaves folded; Figs. 6, 7, and 8, details of the spring-holder; Figs. 9 and 10, views of the arbor or pin detached; Fig. 11, a plan view of one end of the leaf to which the holder is pivoted.

The object of this invention is to improve the construction and operation of that class of spring-hinges in which the spring operates to hold the door, screen, or window-blind either closed or open; and its nature consists in the several combinations of parts hereinafter set forth and claimed as new.

In the drawings, A B indicate the leaves; C, the pintles; D, spring; E, the spring-holder; F, the center pin or arbor; *a a'*, attached ends of the spring; *b*, loop or projection to which the spring end *a* is attached; *c d*, ends or disks of the spring-holder; *e f g*, head of the spring-pin; *h*, spring-groove on the end *d* of the spring-holder; *i j*, locking projections on the spring-holder; *k*, openings in the ends of the spring-holder for inserting the pin F; *l m*, stops or abutments on the leaves, which prevent them from turning too far backward; *n*, locking-pins.

The leaves A B are made open at their inner edges, as shown at Fig. 2, to permit the free action of the spring in its movements forward and back, or inward and outward. They are connected by the pintles C, using slots, as shown, or otherwise, as may be found most convenient. They are provided with limit-stops, *l m*, to prevent them from closing backward when not applied for use. The pintles C may project, or they may be even or flush with the ends of the hinges. In this form I have a complete hinge or butt open in the middle, as stated, and in this opening I insert the spring and its attachments, as shown. The spring is an ordinary helical spring made of any suitable spring-wire, and the end *a* is attached to the loop or projection *b* of the leaf A. The spring-holder is made in the form shown in Fig. 7, and is usually cast in one piece. Its ends are disk-formed and provided with slots *k*, in which the spring-pin F is inserted; also, with projections *i j*. These disks are connected together by a bar, E, which is attached to or in line or nearly in line with the projections *i j*. The end *d* is provided with a circumferential groove, *h*, around which one end of the spring passes, and the end *a'* of the spring is attached to the connecting-bar E at the point *i* in Fig. 7.

The arbor or pin F is provided at one end with a head, *g*, which head is provided with a flange or washer, *e*, having its inner side inclined at *f*, and against which the end of the spring fits. The spring at this end *a* is attached to the leaf A.

In order to prevent the spring from rotating the holder, the leaf B is provided with pins *n*, which engage with the notches or projections *i j*, Figs. 6 and 8, so that when either or both of the leaves are moved the spring-holder maintains the same relation to the leaf B in all of its movements. These pins *n* are also pivots upon which the spring-holder can turn, so as to move outward when the hinge is folded and inward when it is opened, these being the only points of attachment between the spring-holder and the hinge proper. The attachment of the spring is such that no other fastening is required to keep it and its holder in position when the end *a* is attached to the leaf A. The head *g* of the pin and the groove or projection *h* on the end *d* of the holder keep the spring in position and in line when at rest and during its movements. By this construction and arrangement I produce a very simple and cheap spring-hinge which is capable of acting alternately in either direction—that is, to hold the door, screen, window-blind, or other thing to which it may be attached either open or closed, whenever the part to which it is attached moves to one side or the other of the neutral line of spring action, and by hav-

ing the spring and its connections independent of the pintles and wholly disconnected therefrom the spring and its holder are free to move out or in in use. This device will be operative with only one pin *n*. In placing the spring in position it is to be sufficiently compressed endwise to cause the ends to remain in position on their supports.

I am aware that a double-acting spring-hinge has been heretofore constructed in which the spring was provided with a holder. I do not, therefore, broadly claim this feature; but by my construction its form is greatly simplified, its action improved, and a cheaper hinge is produced with a materially less number of parts than those heretofore used for this purpose.

What I claim as new, and desire to secure by Letters Patent, is as follows:

1. The spring-hinge composed of the leaves A B, single spring-holder E, made in one piece, spring D, and pin F, substantially as and for the purpose specified.

2. In a spring-hinge having two leaves, the combination of the spring D, directly connected to a leaf at the end *a*, and connected at the opposite end to the holder E, with said holder and one or more pins, *n*, on the opposite leaf, substantially as described.

3. The combination of the two leaves hinged together and one provided with a pin, *n*, the spring-holder consisting of two disks slotted and connected together by a bar provided with a hook engaging with the pin *n* of the leaf, the arbor F resting in the slots of the disk, and the spring D encircling said arbor and connected at one end to one leaf and at the opposite end to the spring-holder, substantially as described.

4. The pin or arbor F, having the flanged head *g*, in combination with the holder E, having the groove or projection *h* for keeping the spring in place and in line, substantially as specified.

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