(Model.)

G. W. WARNER.

SPRING HINGE.

No. 415,232. Patented Nov. 19, 1889.

Fig. 1.

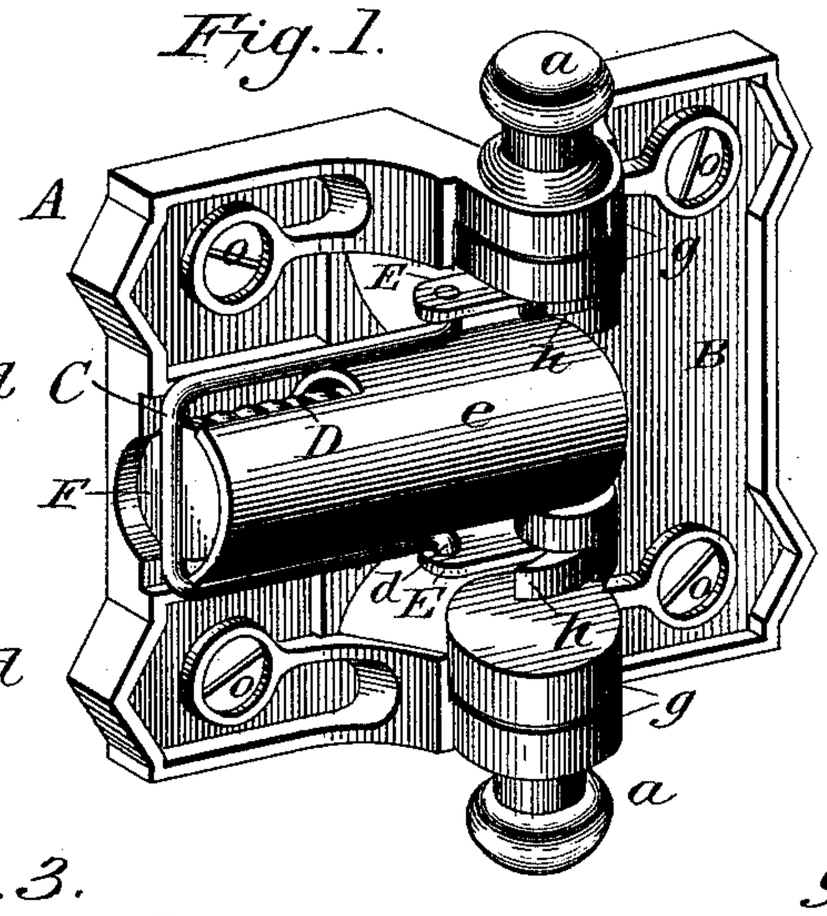


Fig. 7.

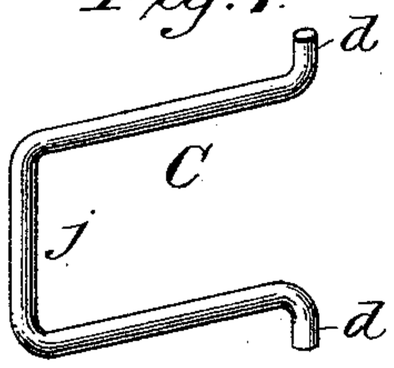


Fig. 8.

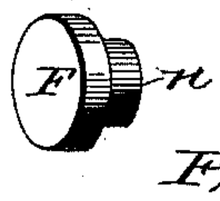


Fig. 9.

Fig. 3.

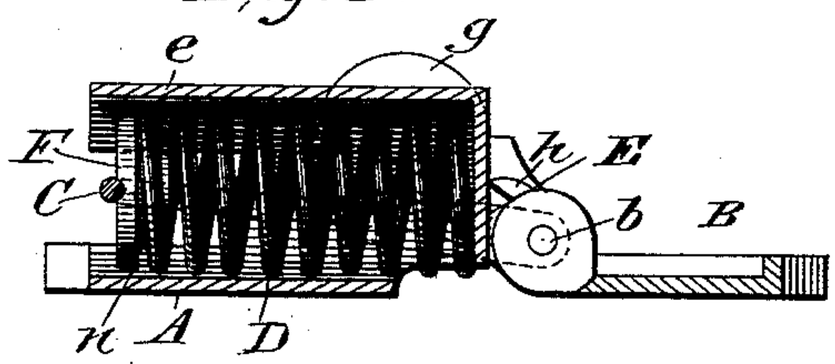


Fig. 2.

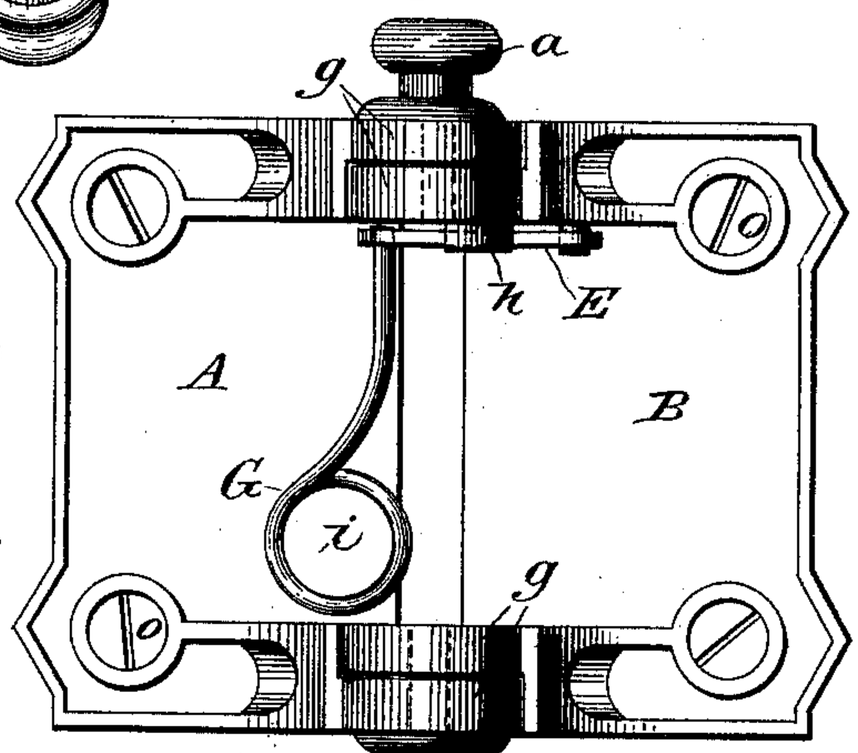


Fig. 5.

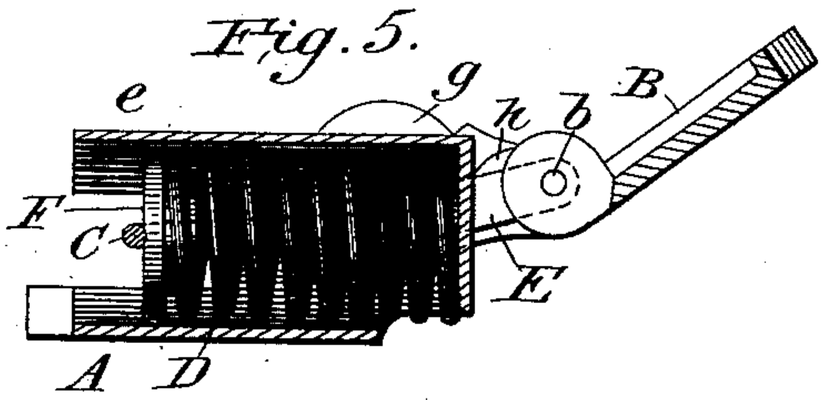


Fig 6

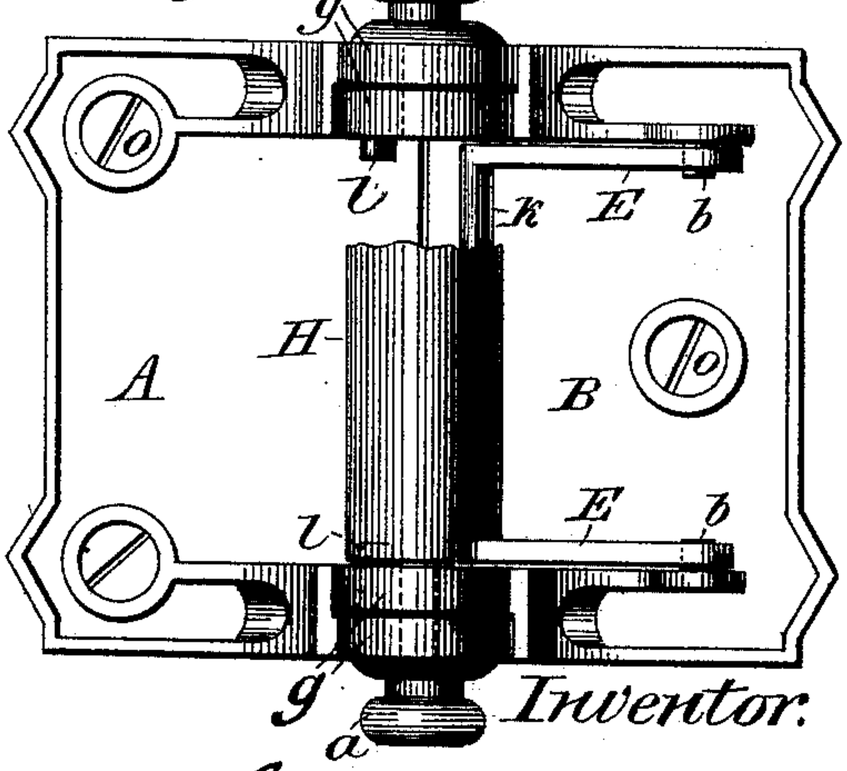
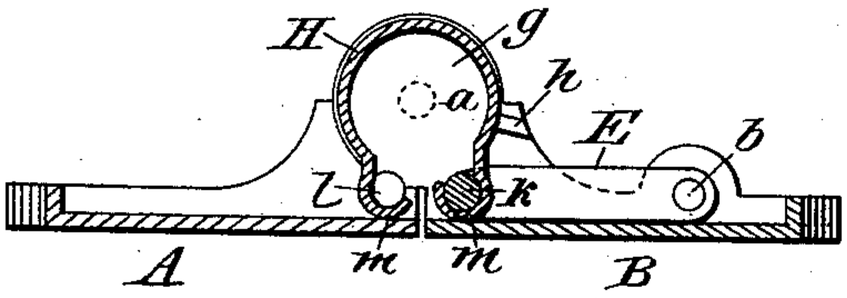


Fig. 4.



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UNITED STATES PATENT OFFICE.

GEORGE W. WARNER, OF FREEPORT, ILLINOIS.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 415,232, dated November 19, 1889.

Application filed May 23, 1889. Serial No. 311,904. (Model.)

To all whom it may concern:

Be it known that I, GEORGE W. WARNER, a resident of Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Spring-Hinges; and I do hereby declare the following to be a full and clear description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in spring-hinges, and particularly relates to a means whereby the greatest tension is secured at the closing-point.

The invention is fully described and explained in this specification and shown in the accompanying drawings, in which—

Figure 1 is a perspective view of the improved hinge. Fig. 2 is a plan view of the device, showing another form of spring. Fig. 3 is a sectional view of the leaves and spring of Fig. 1 through the line *x x*, showing the yoke in position. Fig. 5 is a sectional view of the leaves and spring of Fig. 1, showing the hinge partly open and the yoke in position. Fig. 6 shows the device with still another form of spring, with the spring partly broken away. Fig. 4 is a sectional view of Fig. 6. Fig. 7 is a perspective view of the yoke C used in Fig. 1. Fig. 8 shows a view of washer used in Fig. 1. Fig. 9 is an enlarged view of link used in the device and fully described hereinafter.

In the views, A B are the leaves of a surface butt, each provided with ears *g g* and joined together by the usual pintles *a a*.

In Figs. 1, 3, and 5 the leaf A is provided with a shell or barrel *e*, open at the outer end and closed at the inner end, and lying parallel and contiguous to the face of the leaf at right angles to the axis of the hinge, and preferably midway between the two pairs of ears *g g g g*. The sides of the outer end of the barrel are cut away sufficiently to permit the yoke *j* to move longitudinally of the barrel when the spring is compressed. In this barrel is placed a straight coil-spring D, its one end resting against the inner closed end of the barrel *e*, and its outer free end being fitted with a washer F to provide suitable bearing for the connecting portion *j* of the yoke C, which, as shown in Fig. 7, is provided with pins or trunnions *d d*, fitted to enter the holes *c* in one end of links E E. The links E E are at their other end fitted to the pins *b b* of the leaf B. The leaf B is provided with stops *h h*.

In Figs. 2 and 6 the construction differs in that other forms of springs are used, in Fig. 2 the spring being a coil-spring located around the stud *i*, which is integral with and perpendicular to the face of the leaf A. One end of the spring is locked with the stud *i*, the other end passing outward from the coil to engage with the link E, the yoke C of Fig. 1 being dispensed with. In Fig. 6 the spring is made of sheet steel or brass in cylindrical form open at one side, the edges being bent to form hooks *m m*, which engage with pins *l l* on leaf A and with links E E on leaf B by means of a bar connecting the said links E E.

The improvement may be applied to other forms of the so-called "holdback hinges;" but those shown are sufficient to clearly show the application.

The operation of the device is in all cases the same and as follows, referring to Figs. 1, 3, and 5: The spring D being compressed between the closed end of the barrel *e* and the yoke C causes the yoke to draw upon the links E E, and they in turn act on the leaf B, holding it in a closed position. Upon opening the hinge the links E E turn on the pins *b b* until the links E E strike the stops *h h*, when the links remain stationary, as seen in Fig. 5, and in the further opening of the hinge the trunnions *d d* of the yoke C turn in the holes *c c* of the links E E. The advantage of this construction can be readily understood by observing that if the links E E be dispensed with and the yoke C be lengthened and attached directly to the pins *b b*, then in all positions of the hinge-leaves the spring would act on the points *b b*; but in the construction shown the spring acts on the points *b b* when the hinge is closed, but continues so to act only until the links E E strike the stops *h h*. Then, the links being stationary, on further opening the hinge the yoke C turns in the holes *c c*, and the power of the spring is applied at *c c* instead of at *b b*, as at first, and the line of action of the power of the spring being in the former case farther from the axis of the hinge than in the latter case (in the former case C

to *b*, Fig. 3, in the latter case C to *d*, Fig. 5) the tension exerted will be greatest when the hinge is closed.

The position and form of the stops *h h* and links E E may be varied to adapt to use on hinges of various forms, and also for the purpose of varying the degree of change in the tension.

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

1. A spring-hinge composed of two leaves with a spring arranged thereon for closing the same, in combination with one or more links E E and stops *h h*, substantially as and for the purpose specified.

2. The spring-hinge composed of leaves A B, spring D, yoke C, links E E, and stops *h h*, substantially as shown.

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