

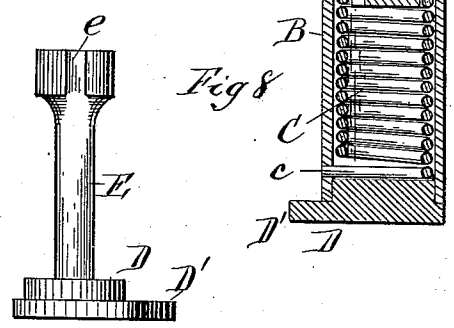
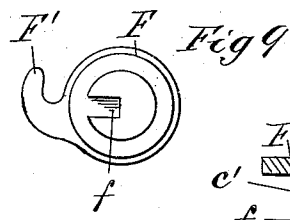
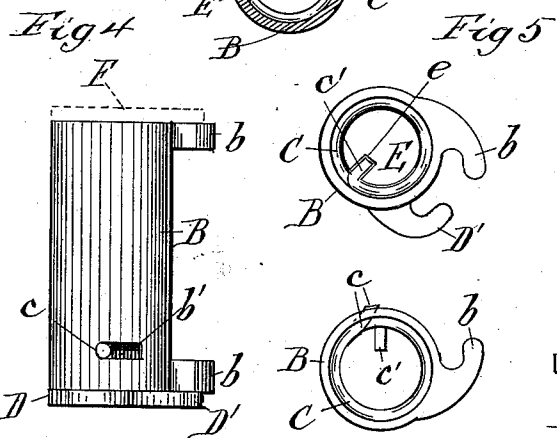
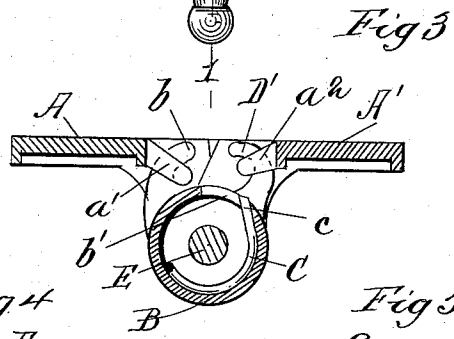
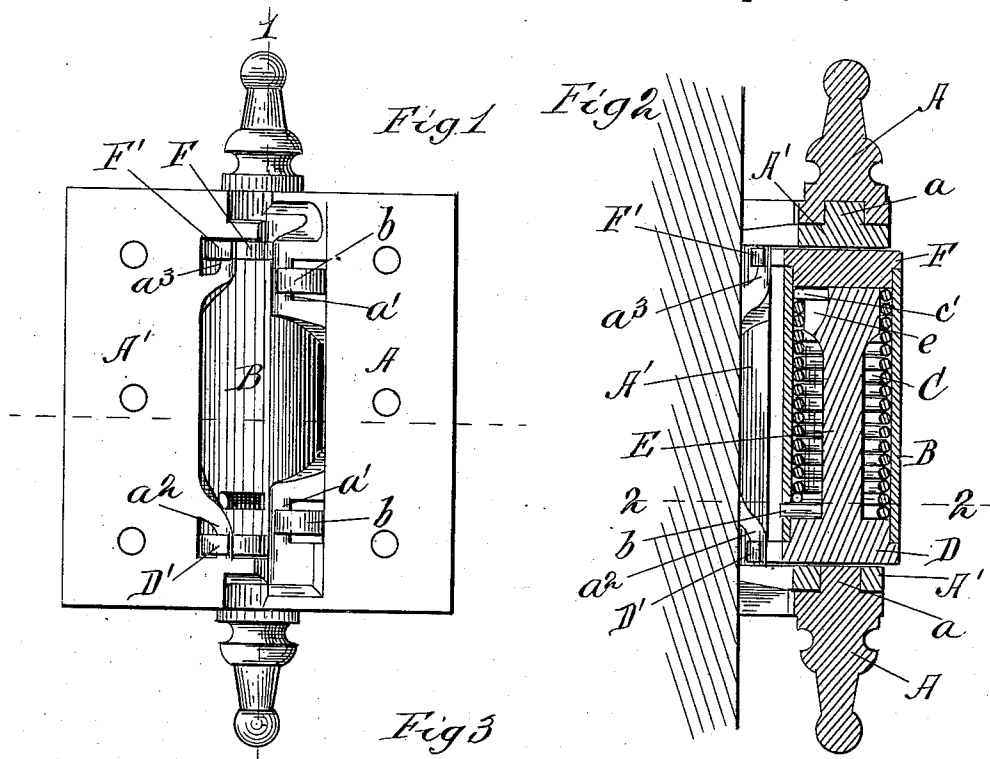
(Model.)

G. W. WARNER.

SPRING HINGE.

No. 389,727.

Patented Sept. 18, 1888.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE W. WARNER, OF FREEPORT, ILLINOIS.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 389,727, dated September 18, 1888.

Application filed August 12, 1887. Serial No. 246,808. (Model.)

To all whom it may concern:

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

Figure 1 is a rear elevation of a hinge embodying my invention; Fig. 2, a sectional view of the same, taken on the line 1 1 of Fig. 1; Fig. 3, a plan section taken on the line 2 2 of Fig. 2; Fig. 4, a detail view of the tube or cylinder detached with the upper trunnion removed; Fig. 5, a plan view of the construction shown in Fig. 4; Fig. 6, a bottom plan view of the same; Fig. 7, an elevation of the lower trunnion and core detached; Fig. 8, a detail sectional view illustrating a modified form of my invention, and Fig. 9 a detail bottom plan view of the upper trunnion thereof detached.

Like letters refer to like parts in all the figures of the drawings.

My invention relates to spring-hinges, and has for its object to produce a strong and durable, and at the same time a simple, hinge, which will operate to hold the door or other part which it supports in either a closed or an open position, as desired.

To this end my invention consists in certain novel features, which I will now proceed to describe, and will then particularly point out in the claims.

In the drawings, A and A' represent the leaves of the hinge, which are connected in the usual manner by means of pintles *a*.

B represents a tube or cylinder provided externally with hooks *b* at each end, which engage loops *a'* on the leaf A of the hinge.

C represents a coiled spring arranged within the tube B and having one of its ends connected to the said tube in any suitable manner, this connection being preferably effected by bending out the end of the spring, as shown at *c*, to cause it to engage with a slot or opening, *b'*, in the tube or cylinder B. The other end of the spring is connected to one of the trunnions. In the construction shown in Figs. 1 to 7 of the drawings the lower trunnion, D, which fits within and closes the lower end of

the tube B, is provided externally with a hook, D', by means of which it is connected to a loop, *a''*, on the leaf A'; and it is further provided with a core, E, which extends upward within the coiled spring C to the top thereof, at which point the upper end of said spring is connected to the said core. In the present instance this connection is shown as effected by forming a slot, *e*, in the enlarged head of the core and bending the upper end, *e'*, of the spring C to cause it to engage the said slot. The upper trunnion, F, fits within the upper end of the tube B and closes the same, and is provided with a hook, F', by means of which it is connected to a loop, *a''*, on the leaf A' of the hook. The upper end of the spring C may be connected to the upper trunnion, as shown in Figs. 8 and 9, in which case the core E will be dispensed with and the trunnion F will be extended some distance down into the interior of the spring C and will be slotted, as shown at *f*, to receive the inwardly-bent end *c'* of the said spring.

The operation of my improved hinge is as follows: The torsional action of the spring C is exerted upon the leaf A through the medium of the tube B, to which one end of the said spring is connected, and is exerted upon the leaf A' through the medium of that one of the trunnions to which it is connected. This torsional action will serve to hold the leaves of the hinge either in the position shown in the drawings, in which the said leaves lie in the same plane, or it will hold them in a position of parallelism to each other. It will be at once seen that when the hinge is properly attached to a door and its casing it will hold the said door either in a closed or in an open position, as desired, in the manner usual in hinges of this general description.

It will also be observed that the tube is connected to its leaf by a pivotal connection, while the end trunnions are connected to their leaf in a similar manner, so that the tube and spring as a whole may move with and independently of the leaves and on a line midway between the two, thereby equalizing the action and rendering it both smooth and uniform.

Various modifications in the details of construction may be made without departing from the principle of my invention. For instance,

the tube B may be provided with a single hook, *b*, instead of the two which I have shown, although I prefer the construction shown, for the reason that it distributes the strain more
5 equally.

Various other modifications will readily suggest themselves, and I therefore do not wish to be understood as limiting myself strictly to the precise details hereinbefore described, and
10 shown in the drawings.

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

1. In a spring-hinge, the combination, with
15 the leaves and their pintles, of an independent tube or cylinder pivotally connected to one of the leaves and provided with end trunnions pivotally connected to the other leaf, and the coiled spring arranged within the tube and
20 having one of its ends connected to the said

tube and its other end connected to one of the trunnions, substantially as and for the purposes specified.

2. In a spring-hinge, the combination, with the leaves A and A', the former provided with
25 loops *a'* and the latter with loops *a²* *a³*, of the tube B, having hooks *b* to engage with the loops *a'*, the trunnion F, having a hook, F', to engage with the loop *a³*, the trunnion D, having hook D' to engage with the loop *a²*, and
30 provided with the core E, and the coiled spring C, arranged within the tube and having one end connected thereto and the other end connected to the core E, substantially as and for the purposes specified.

GEORGE W. WARNER.

Witnesses:

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