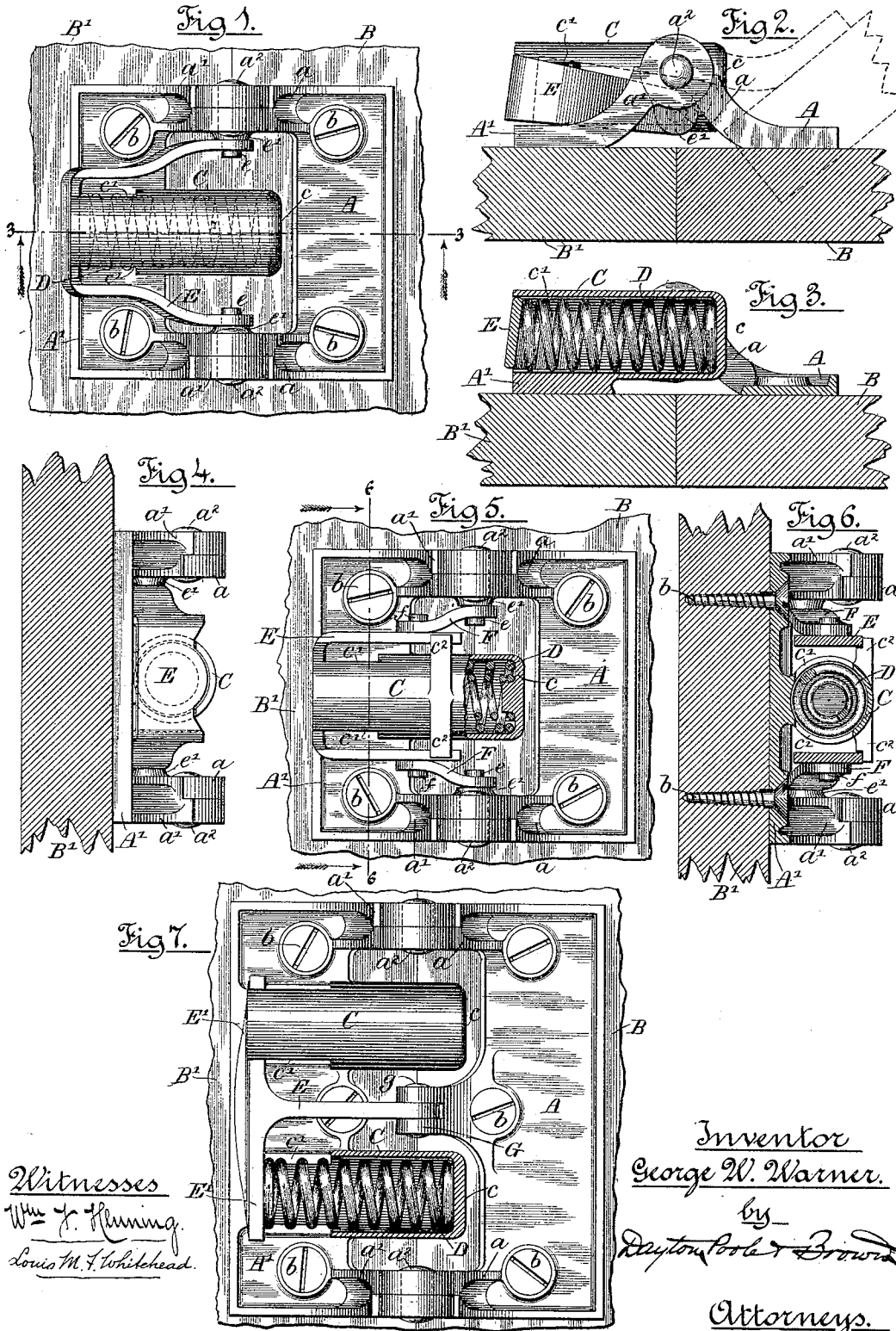


(No Model.)

G. W. WARNER.  
SPRING HINGE.

No. 405,931.

Patented June 25, 1889.



Witnesses  
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# UNITED STATES PATENT OFFICE.

GEORGE W. WARNER, OF FREEPORT, ILLINOIS.

## SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 405,931, dated June 25, 1889.

Application filed November 20, 1888. Serial No. 291,353. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. WARNER, 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 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, which form a part of this specification.

This invention relates to improvements in spring-hinges; and it consists in the novel devices hereinafter shown, described, and more specifically pointed out in the appended claims.

In said drawings, Figure 1 is a plan view of a hinge embodying my invention. Fig. 2 is a side view of the same. Fig. 3 is a vertical sectional view of the hinge, taken on line 3 3 of Fig. 1, looking in the direction indicated by the arrows. Fig. 4 is an end view of the hinge. Fig. 5 is a plan view, partly in section, of a slightly-modified form of my invention. Fig. 6 is a vertical sectional view of the latter, taken on line 6 6 of Fig. 5, and looking in the direction indicated by the arrows. Fig. 7 is a plan view, partly in section, of another slightly-modified form of my invention.

In said drawings, A A' are the leaves of my improved hinge, which are secured to the door B and door-frame B' by means of screws b or by other suitable means.

Upon adjacent sides the leaves A A' are provided at each end with raised arms a a', which extend upwardly and toward each other, and which are provided at their ends with circular enlargements. Pintles a<sup>2</sup> are passed through holes in the enlarged ends of the arms a a', and thereby unite the latter and form a hinge-joint, as will be readily understood. It will be noticed that the leaves A A' are set back or away from the adjacent edges of the door B and the door-frame B', and that the arms a a' extend inwardly, so that the joint or pivot of the hinge is vertically over or in line with said adjacent edges of the door and door-frame.

Secured to or integral with one of the leaves A A' (in this instance the leaf A') is the bar-

rel C, located between the pintles a<sup>2</sup> and extending at right angles to the line of the length of the pintles a<sup>2</sup>. The inner end of the barrel C is closed at c, while the outer end of the barrel C is open. A portion of the sides of the said barrel at the open end thereof is slotted or cut away, as shown at c'. Within the barrel C is located a spiral spring D. A yoke E is pivoted at its ends at e to the lugs e', which latter depend from the enlarged ends of the arms a of the leaf A. The yoke E is so positioned that its central and straight portion rests against the outer end of the spring D, and will enter easily the slots c' of the barrel C, so as to freely reciprocate therein.

When the door B is closed, the hinge is in position illustrated in Figs. 1 and 3, the spring D being extended, as shown. When the door is moved for the purpose of opening the same, the leaf A and the door will be moved about the pintles or pivots a<sup>2</sup>, as shown in dotted lines in Fig. 2, the end of the yoke E, swinging on its pivot e, will be carried by the lug e' with the arm a, and in the same direction around the pivots a<sup>2</sup>, exerting pressure against the spring D and compressing the latter within the barrel C. This movement continues until the pivot e has passed the "dead-center," at which time the spring D exerts its force and presses the yoke E outward or away from the closed end c of the barrel, carrying the leaf A with it until the latter is in position over the leaf A', the faces of the two leaves being adjacent to each other and the door open, (in which position it is retained by the spring until pressure is exerted thereon for the purpose of closing the door,) and thus retains the door in an open position.

In closing the door the operation of the parts will be the reverse of that just described.

By the construction above described it will be noted that the spring D acts to retain the door either in its open or its closed position when the spring is in its extended or normal position.

In Figs. 5 and 6 the ends of the yoke E are pivoted at f to the links F, the other ends of links F being pivoted at e to the lugs e'.

c<sup>2</sup> are guide pieces or lugs integral and ex-

tending laterally out from the upper portion of the barrel C to engage the upper edges of the arms of the yoke E. This construction is preferable where a very strong spring or  
 5 where two springs are inserted in the barrel C, as shown in Figs. 5 and 6.

Where it is desirable to employ large springs, it is sometimes convenient to provide two barrels C C, as shown in Fig. 7. In this  
 10 modification of the invention the yoke E may be T-shaped and located centrally between said barrels, with the projecting arms E' each engaging the spring in the barrel. The main arm of the yoke E is pivoted at *g* between the  
 15 bifurcated end of the raised lug or arm G, which extends upwardly and centrally from the leaf A.

The operation of both devices illustrated in Figs. 5 and 7 is the same as the operation  
 20 of the device shown in the principal figure and above described.

It will be noted that the pressure required to either open or close the door will be that which is sufficient only to compress the spring  
 25 or springs employed, and at the same time to carry the movable pivot to a point beyond the line passing through the longitudinal center of the spring and through the center of the fixed pivot, from which point the spring  
 30 or springs begin to expand, forcing the yoke E outward and thus completing the operation by opening or closing the door.

While in the forms illustrated in Figs. 5 and 6 the yoke E may fit with reasonable  
 35 snugness in the slot *c'*, so as to produce as little friction as possible, yet in the form illustrated in Figs. 1 and 7 the yoke E must have a play within said slots sufficient to allow a slight rotary movement of said yoke therein,

which will be caused by the partial rotation  
 40 of the end of the yoke about the pintles *a*<sup>2</sup> as the former are carried from the position illustrated below said pintles to a corresponding position above said pintles and back again  
 45 when the door is respectively opened and closed.

I find that by the construction above described I am enabled to use a relatively large and strong spring with a very light hinge.

I do not wish to limit myself to the barrel  
 50 C, as illustrated, for holding the springs D in position, as any mechanical device which will hold said springs in operative position may be employed.

I claim as my invention—

1. The spring-hinge comprising two leaves  
 55 hinged together at their ends, a hollow tube or barrel secured to one of said leaves, a spring located within said barrel, and a movable yoke pivoted to the other of said leaves and  
 60 adapted to compress said spring within the barrel when the leaves are first moved from their closed or outstretched position.

2. The spring-hinge comprising the leaves  
 65 A A', pivoted together at *a*<sup>2</sup>, the hollow barrel C, secured to the leaf A' and provided with longitudinal slots *c'*, the spring D, located within said barrel, the yoke E, pivoted at *ee* to the movable leaf A and adapted to move  
 70 within said slots *c'* to engage said spring D, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

GEORGE W. WARNER.

Witnesses:

HENRY SMITH,

HARRY G. MCCULLOCH.