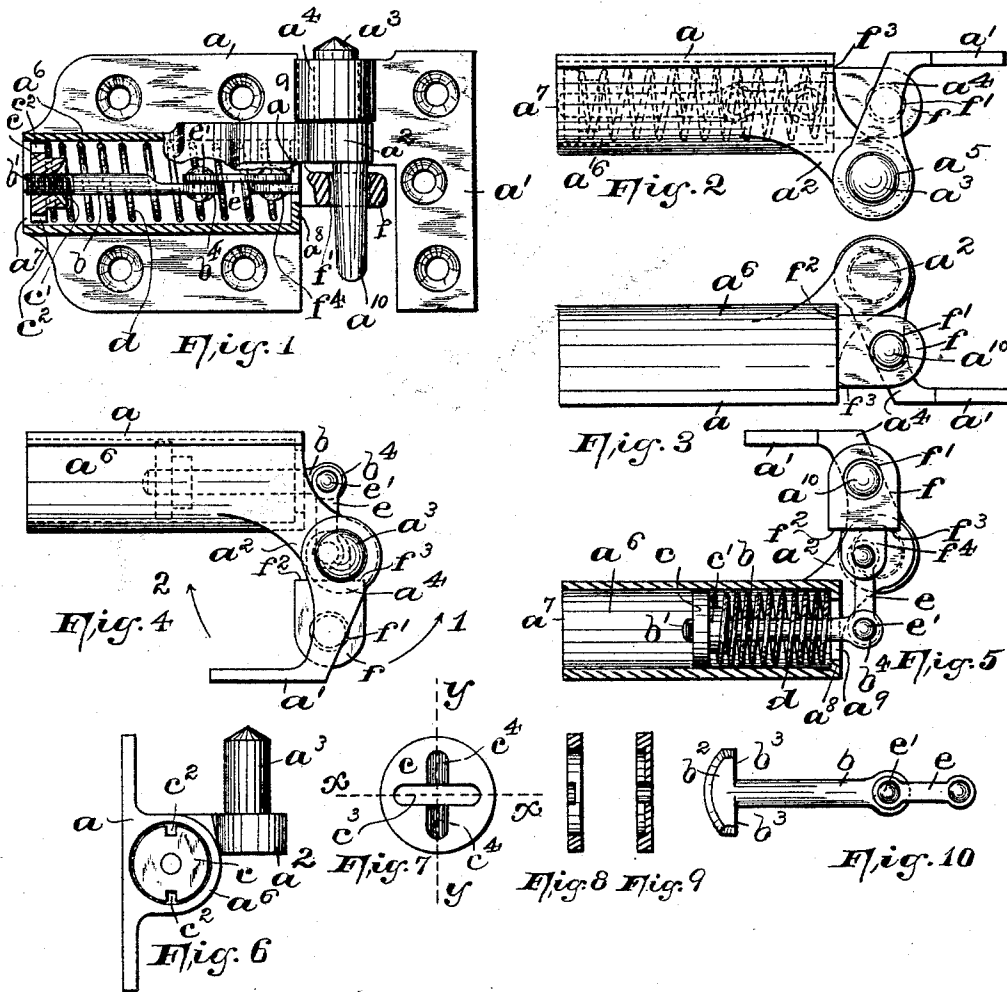


(No Model.)

J. WOLF.
SPRING HINGE.

No. 461,908.

Patented Oct. 27, 1891.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOSEF WOLF, OF NEWARK, NEW JERSEY.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 461,908, dated October 27, 1891.

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To all whom it may concern:

Be it known that I, JOSEF WOLF, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Spring-Hinges; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My present invention relates to improvements in hinges and serves for the purpose of removably hanging doors, shutters, &c., and also as a spring and holdback for reliably holding open the door or shutter when entirely thrown back, and which serves also as a means for automatically closing the door or shutter when the same has been partially opened.

The invention consists in certain arrangements and combinations of parts, as will be hereinafter more fully described, and finally embodied in the clauses of the claim.

The invention is illustrated in the accompanying sheet of drawings, in which similar letters and figures of reference are employed to indicate corresponding parts in each of the several views.

Figure 1 is a front elevation of my improved hinge, with one hinge-leaf provided with a cylinder, shown in section, and a spring-actuated piston therein connected by means of an eye with a finger arranged on the other hinge-leaf, whereby the door or shutter can be removed without disturbing the operating-mechanism of the hinge, or without removing the screws securing the hinge-leaves. Figs. 2 and 3 are views of the respective sides of my hinge. Fig. 4 is a view similar to that represented in Fig. 2, but showing the hinge-leaves in open relation when the door or shutter has been opened. Fig. 5 is a reverse view of that illustrated in Fig. 4, the cylinder being represented in section to illustrate more clearly the arrangement and the working parts of the spring-actuated piston. Fig. 6 is an end view of one of the hinge-leaves provided with the cylinder. Figs. 7, 8, 9, and 10 are detail views of

a modified form of piston and its rods; and Figs. 8 and 9 are sections taken on lines x and y , respectively, in Fig. 7.

In the drawings, a and a' indicate the two leaves of my spring-hinge, each leaf being provided with the usual perforations for the insertion of screws for securing the respective leaves to a door or shutter and the frame. As will be seen from the figures, the hinge leaf or plate a is provided with the usual ear a^2 and a pintle a^3 , while the other leaf or plate a' is provided with an ear a^4 , having a hole or perforation a^5 therein, by means of which when the leaves have been secured upon the door or shutter and the frame, respectively, said shutter or door can be removably hung in its frame by inserting the perforated ear a^5 over the post or pintle a^3 , as will be evident. Upon the hinge-leaf a I have also formed a casing or cylinder a^6 , preferably open at its end a^7 , said cylinder and the hinge-leaf being preferably cast in one piece. Within said cylinder is arranged a rod b , provided with a threaded end b^1 , upon which can be screwed a piston c , said piston being provided at one end with a funnel-shaped opening c^1 and upon the side with recesses c^2 , so that when said piston has been placed within the open end of the cylinder, after the rod and its connecting mechanism have also been arranged therein, it need only be forced down upon a spring d , encircling the rod b , and turned by means of a wrench fitting into the recesses c^2 , when the end of the rod will be forced into the funnel-shaped opening c^1 and the piston screwed upon the end of said rod. By this means the piston can be readily adjusted upon the end of the rod to increase or decrease the tension of the spring. In lieu of the piston shown in Figs. 1 and 6, I can use a piston of the construction shown in Figs. 7, 8, and 9, which is provided with a longitudinal slot c^3 and with two oppositely placed recesses c^4 , which are open on that side communicating with the slot. In that case, instead of using a rod provided with a screw-thread, I form the end of the rod b with a flattened head b^2 , having the shoulders b^3 . Said flattened head is inserted through the longitudinal slot c^3 in the piston, and the latter turned upon the rod, so that the shoulders b^3 will rest within the recesses c^4 of said pis-

ton. In this manner I have constructed two forms of cylinders and rods, which can be readily secured in place in the cylinder. The forward end of the rod *b*, as will be seen from 5 Figs. 1, 4, 5, and 10, is provided with an eye *b*⁴, and pivotally connected to said end is a link *e*, secured thereto by means of the pin *e*¹, passing through a perforation in the end of the link *e* and through the eye *b*⁴. In front 10 of the partially-closed end *a*⁸ of the cylinder is a connecting-head *f*, provided with a perforation *f*¹, and the shoulders *f*² and *f*³, which bear against the end of the cylinder, while a link connection *f*⁴ on the said head is made 15 to project through an opening *a*⁹ in said end and pivotally attached to the opposite end of the link *e*, as will be clearly seen from the drawings. The opposite leaf *a*¹, provided with the ear *a*², has a downwardly-projecting 20 post or finger *a*¹⁰, which, when the perforated ear has been inserted over the pintle or post *a*³, passes down into the perforation or hole *f*¹ in the connecting-head *f*, and thereby a flexible and pivotal connection is formed between 25 the hinge-plates *a* and *a*¹. When the door or shutter closes with a slam, the shoulders *f*² and *f*³ come in contact with the end of the cylinder, and owing to the fact that the hole in the head *f* thereby assumes a certain position, 30 and also owing to the loose arrangement of the finger within said hole, said finger does not receive the shock with sufficient force to break off said finger from the leaf *a*¹, and I am thereby enabled to cast the two in one piece. 35 The operation of my improved spring-actuated hinge is as follows: When the two leaves have been secured to the door or shutter and to the frame, as stated, said door or shutter can be hung within its frame, the several 40 parts of the hinge and its operating mechanism being arranged as represented in Figs. 1, 2, 3, and 4. When in the position shown in Fig. 1, the spring is at rest; but as soon as the door or shutter has been opened, as indicated 45 in Figs. 4 and 5, the finger *a*¹⁰ draws upon the connecting-head *f*, which causes the latter and the link *e* and rod *b* and its piston to assume the positions indicated in said figures. When the door or shutter has been opened to 50 such a distance that the link *e* and the connecting-head *f* remain in a position to the right of the vertical axis of the pintle, then the door or shutter will be automatically closed, returning in the direction of arrow 1 55 in Fig. 4; but when said parts have traveled beyond said point to the left of said axis then the door or shutter will be forced still farther

open, the spring acting to draw in an opposite direction upon the head *f*, as will be seen from Fig. 5, whereby the door is held entirely 60 open until closed by a person.

By my construction herein described I have devised a hinge provided with mechanism for automatically closing the door or holding it 65 entirely open, in which the door or shutter can be lifted from its hinges without first taking off the operating mechanism or touching the same in any manner.

Having thus described my invention, what I claim is— 70

1. In a spring-hinge, the leaf *a*, provided with a cylinder and an upwardly-projecting pintle, and a leaf *a*¹, provided with a perforated ear and a downwardly-projecting finger or post, and a spring-actuated rod connected with said post, whereby said leaves and 75 the operating mechanism can be placed in separable sliding relation to each other, for the purposes set forth.

2. In a spring-hinge, the leaf *a*, provided 80 with a cylinder and an upwardly-projecting pintle, and a leaf *a*¹, provided with a perforated ear and a downwardly-projecting finger or post, a spring-actuated rod in said cylinder, and a flexible connection for pivotally 85 connecting said rod with said finger or post, whereby said leaves and the operating mechanism can be placed in separable sliding relation to each other, for the purposes set forth. 90

3. In a spring-hinge, the leaf *a*, provided with a cylinder, and a leaf *a*¹, provided with a finger or post, a piston and a spring-actuated rod in said cylinder, a link *e*, and a connecting-head *f*, provided with a perforation, 95 said head being in pivotal engagement with said finger or post, whereby said leaves and the operating mechanism can be placed in separable sliding relation to each other, for the purposes set forth. 100

4. In a spring-hinge, in combination with the spring-actuated rod *b*, provided with a head consisting of oppositely-projecting shoulders *b*³, a piston *c*, provided with a slot *c*², and recesses *c*⁴, whereby said piston can be turned 105 into holding engagement with the shoulders on the rod *b*, as and for the purposes set forth.

In testimony that I claim the invention set forth above I have hereunto set my hand this 17th day of February, 1891.

JOSEF WOLF.

Witnesses:

FREDK. C. FRAENTZEL,
WM. H. CAMFIELD, Jr.