

(No Model.)

2 Sheets—Sheet 1.

J. WOLF.
DOOR SPRING AND CHECK.

No. 484,838.

Patented Oct. 25, 1892.

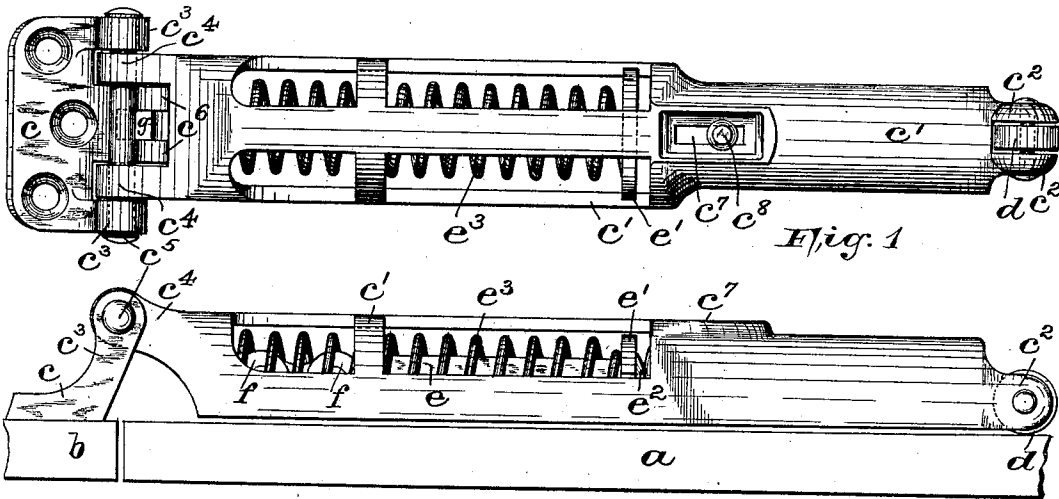


Fig. 2

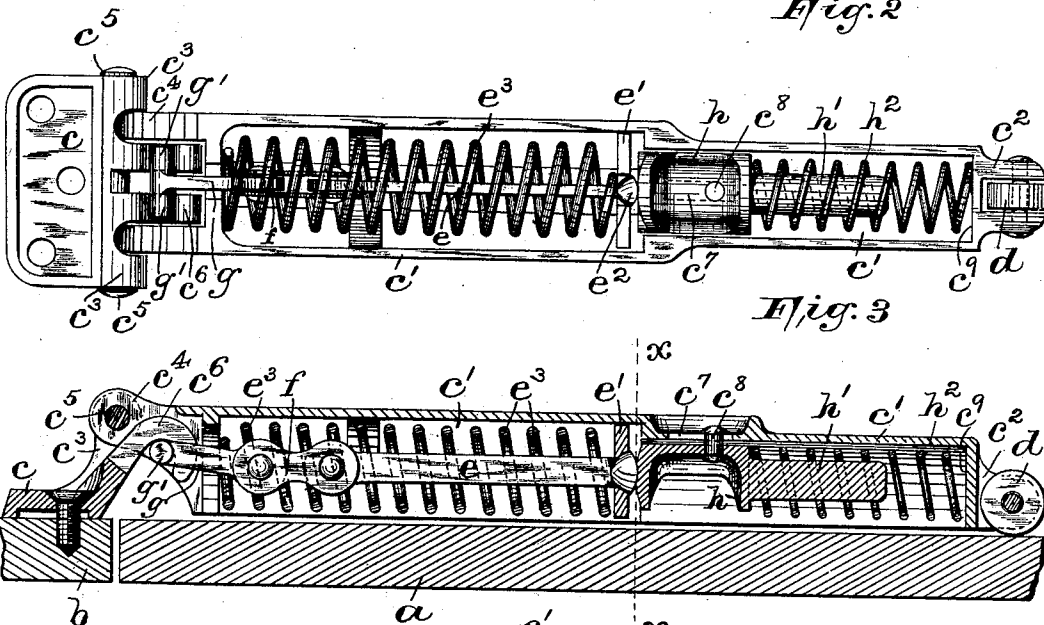


Fig. 3

Fig. 4

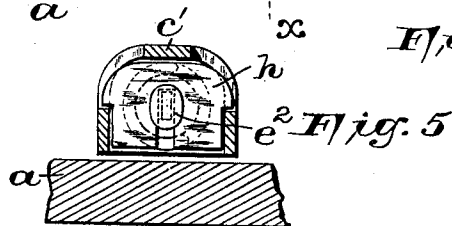


Fig. 5

WITNESSES:

Wm. H. Barnfield, Jr.
B. Munster Trusdell.

INVENTOR:

Josef Wolf,
BY: Fred H. Haentzel, ATT'Y.

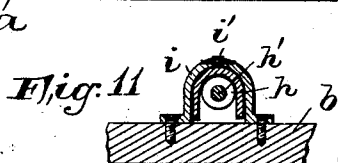
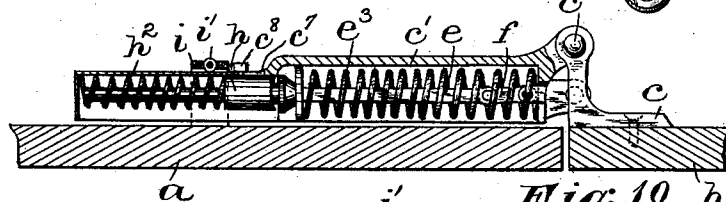
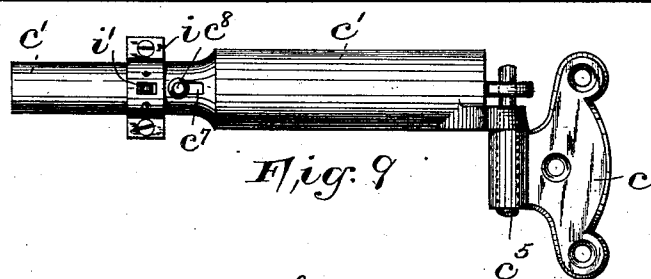
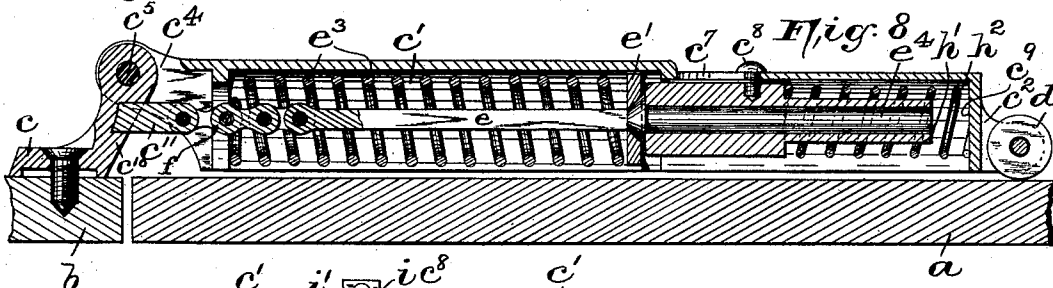
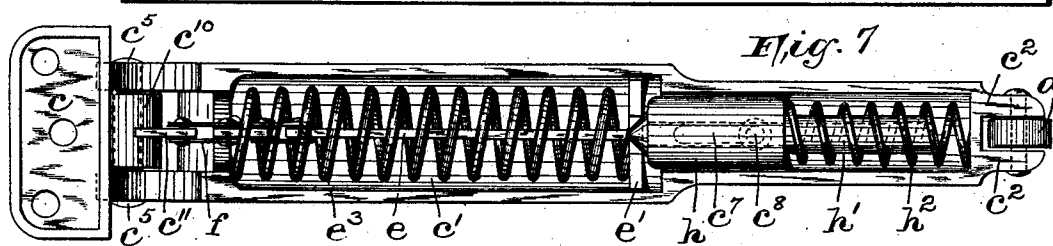
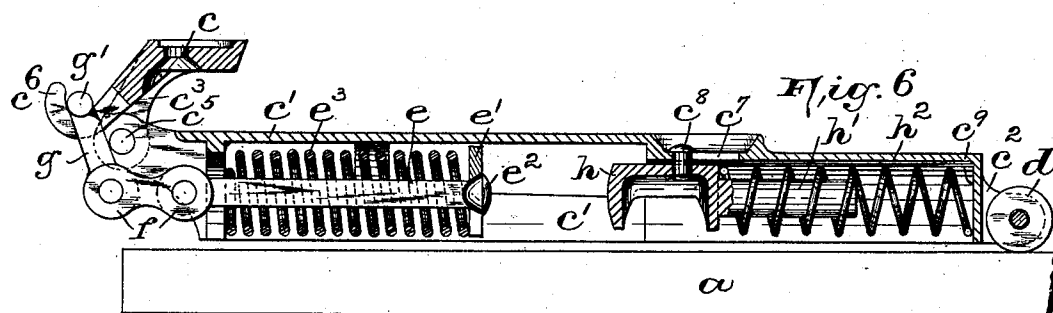
(No Model.)

2 Sheets—Sheet 2.

J. WOLF.
DOOR SPRING AND CHECK.

No. 484,838.

Patented Oct. 25, 1892.



WITNESSES :

Wm. H. Campfield Jr.:
B. Mortimer Trussell.

INVENTOR:

 *Josef Wolf,*
BY *Friedl. Fraentzel,* ATT'Y.

UNITED STATES PATENT OFFICE.

JOSEF WOLF, OF NEWARK, NEW JERSEY, ASSIGNOR TO ALBERT V. WIDMANN AND JOHN COPPERSMITH, OF SAME PLACE.

DOOR SPRING AND CHECK.

SPECIFICATION forming part of Letters Patent No. 484,838, dated October 25, 1892.

Application filed February 20, 1892. Serial No. 422,209. (No model.)

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
5 invented certain new and useful Improvements in Door-Springs; 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 ap-
10 pertains 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 an im-
15 proved door spring and check adapted for use on doors or gates to automatically close the same when opened and to prevent the slamming by the interposition of an additional spring in the cylinder; and it consists
20 in various improvements in the details of the device, such as will be hereinafter more fully described, and finally embodied in the claims.

In the drawings, Figure 1 is a top view of my combined door spring and check. Fig. 2
25 is a side view, and Fig. 3 a bottom view, of the same. Fig. 4 is a vertical longitudinal section of the door-spring; and Fig. 5 is a cross-section of the same, taken on line *x* in said Fig. 4. Fig. 6 is a view similar to Fig.
30 4, illustrating the positions of the several parts of the device when the door has been opened. Fig. 7 is a view of the under side of a slightly-modified construction, and Fig. 8
35 is a vertical longitudinal section of the same. Fig. 9 is plan view of still another modified form of construction embodying the same principle, and Fig. 10 is a vertical longitudinal
40 section of the same. Fig. 11 is a cross-section of the cylinder, shown in connection with a guide having a roller in the top thereof.

Similar letters of reference are employed in each of the above-described views to indicate corresponding parts.

In the several views of the drawings, *a* indicates the door, and *b* the door-frame.

The improved door-spring consists of the leaf *c*, adapted to be secured with screws to the door-frame *b*, and the cylinder *c'*, provided
50 at its free end with ears *c²*, between which I arrange a roller *d*. As will be seen from the several figures of the drawings, said leaf or

plate *c* has upwardly-extending ears *c³*, and said cylinder *c'* has correspondingly-arranged ears *c⁴*, and said ears are pivotally connected
55 by means of a pin *c⁵*, substantially as shown.

The cylinder *c'*, which may be entirely closed or may be skeleton shaped, as shown in Figs. 1 and 2, has arranged therein a rod
60 *e*, provided with a suitable piston *e'*, to which it may be securely riveted, or said piston can be slotted, as shown, in which case the rod *e* is provided with a head *e²* and can be removably arranged in said cylinder. At the other
65 end said rod *e* is connected by means of pivoted links *f* with a comparatively-short bar *g*, having oppositely-projecting arms *g'*, as shown. The arms *g'* are hooked over the
70 hook-arms *c⁶*, extending up from the leaf *c*, and around said rod *e* is placed a helical spring *e³*, these several parts of the mechanism thus forming a complete door-spring, as
75 will be evident.

The cylinder *c'*, as shown, extends back, being provided in its upper side with a slot
80 *c⁷*, in which moves a pin or rivet *c⁸*, to which is secured within the cylinder *c'* a slide or follower *h*, of any suitable construction, provided with a backwardly-extending pin *h'*
85 and a spring *h²*, having its ends abutting against one end of said slide *h* and against the inner end *c⁹* of the cylinder, as shown. Now when the door has been opened, the
90 spring, the piston *e'*, rod *e* and its spring, and the leaf *c*, and the flexible connecting mechanism of the door-spring assume the positions illustrated in Fig. 6, and the spring *h²*, which
95 is of less tension than spring *e³*, and hence has been compressed, is now free to extend, and forces the follower *h* forward until the pin *c⁸* has moved against the forward end of
100 the slot *c⁷*, as shown in said Fig. 6. As soon as the person entering has let go his hold on the door the spring *e³* and the intermediately-arranged mechanism in that part of the cylinder *c'* tend to resume their normal inop-
105 erative positions, (illustrated in Fig. 3,) and as the spring *e³* thus suddenly causes the door to return to its closed position, the end *e²* of the rod *e* suddenly comes in contact with the forwardly-extending follower or slide *h*,
110 and the quick-closing movement is suddenly checked by the resistance offered by the spring

h^2 , and owing to the increased expansive power of the spring e^3 , said spring h^2 and the follower h slowly assume their positions shown in said Fig. 3, while the door slowly closes and without a slam. Of course it will be evident that in place of the spring h^2 I can use a piece of rubber, which is the equivalent of a spring.

As will be seen from the figures, the leaf c only is secured by screws to the door-frame, while the cylinder c' is not fastened at all, for the action of the spring e^3 is to constantly hold the cylinder against the door upon which it slides, being provided with the roller d , hereinbefore mentioned.

In lieu of the construction of the leaf c , (shown in Figs. 1 to 6, inclusive,) said leaf may be provided with an upwardly-extending portion c^{10} , to which the ears of the cylinder c' are pivoted, said portion c^{10} being provided with an outwardly-extending perforated arm c^{11} , connected by several links f to the forward end of the rod e . Said arm c^{11} can be cast integral with the portion c^{10} on the leaf c , or it can be made of a separate piece of strong sheet metal placed in the sand before casting, around which the metal flows, and hence forms one piece with the portion c^{11} , in which it becomes firmly embedded.

The arrangement of the springs in the cylinder and their connecting parts can be similarly placed to those shown in the above-described figures. In Figs. 7 and 8, however, I have shown a slightly-modified form of construction. The follower in this case is cylindrical, being secured beneath the slot c^7 in the cylinder by the screw or pin c^3 ; but the rod e in this case extends back in an arm e^4 , which passes through a bore formed in the follower and its backwardly-extending pin h' , around which the spring h^2 is coiled.

The operation of this form of door-spring is similar to that just described in reference to Figs. 1 to 6, inclusive, as will be evident from the drawings.

In the construction illustrated in Figs. 9 and 10 the several parts of the device are detachably secured together to enable the taking down of a door without disturbing the working parts thereof.

The construction and arrangement of these

parts of the door-spring are similar to those shown and described in a patent granted to me October 27, 1891, and numbered 461,908, and therefore I will not describe this construction further. In this form of construction the cylinder moves under a guide i , preferably provided in the top thereof with a roller i' , as shown.

Having thus described my invention, what I claim is—

1. The herein-described door-spring, comprising therein, in combination, a leaf adapted to be secured to the door-frame, and a cylinder c' , provided with an opening or slot c^7 , a piston-rod e and a piston e' in said cylinder, and a coiled spring e^3 , encircling said rod, means for pivotally connecting said rod with the leaf secured to the door-frame, a follower or slide provided with a pin extending up into said slot c^7 to limit its movement, a backwardly-extending pin h' on said follower or slide, and a spring h^2 , encircling said pin h' to force said follower or slide forward when the piston e' has moved forward, substantially as and for the purposes set forth.

2. The herein-described door-spring, comprising therein, in combination, a leaf adapted to be secured to the door-frame, and a cylinder c' , provided with an opening or slot c^7 , a piston-rod e and a piston e' in said cylinder, and a coiled spring e^3 , encircling said rod, means for pivotally connecting said rod with the leaf on the door-frame, a follower or slide provided with a pin extending up into said slot c^7 to limit its movement, a backwardly-extending pin h' on said follower or slide, said follower or slide and said pin h' being tubular and said rod e having a backwardly-extending arm e^4 projecting into said tubular follower or slide and pin, and a spring encircling said pin on the follower or slide to force the same forward when the piston e' moves forward, substantially 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, 1892.

JOSEF WOLF.

Witnesses:

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