W. Badger, Jr.,

Door Spring.

No. 41,971. Patented Mar. 22, 1864.

Fig: 3.

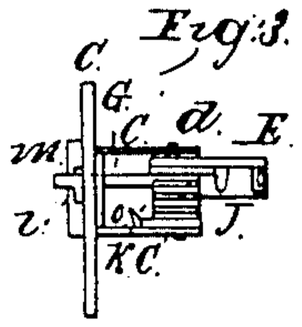


Fig: 2.

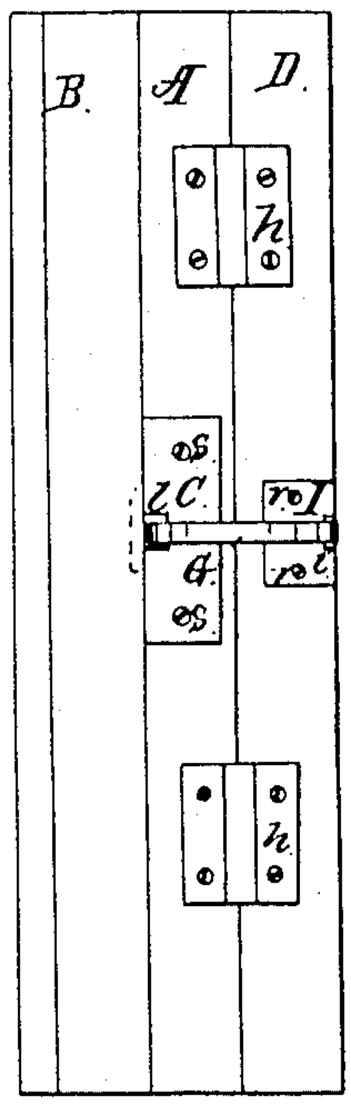
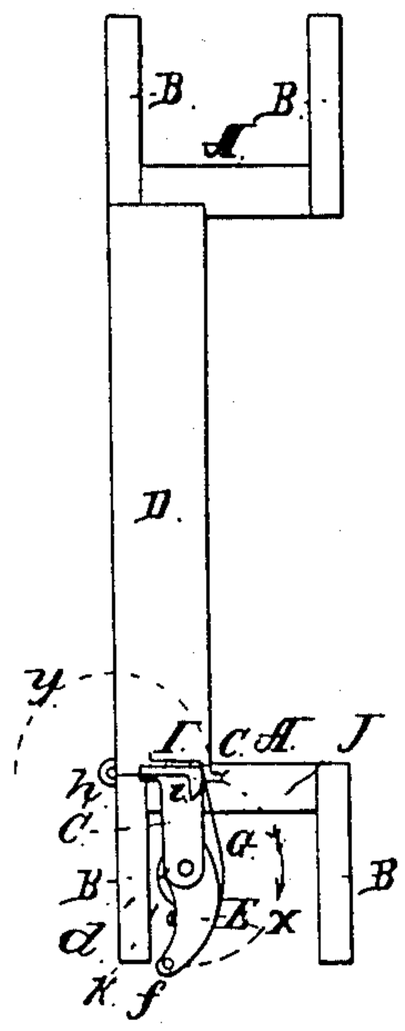


Fig: 1.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLARD BADGER, JR., OF NORTH CHELSEA, MASSACHUSETTS.

IMPROVEMENT IN DOOR-SPRINGS.

Specification forming part of Letters Patent No. **41,971**, dated March 22, 1864; antedated March 15, 1864.

To all whom it may concern:

Be it known that I, WILLARD BADGER, Jr., of North Chelsea, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Door-Springs; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a horizontal section through the door and jambs, just above the spring. Fig. 2 is an edge view of the hinged edge of the door entirely open, and Fig. 3 is a side view of the spring detached.

Like parts are indicated by the same letters in all the drawings.

The nature of my invention consists in the use of a vibrating spring-arm, E, inside of the jamb and casing, and connected with the inside corner of the door D by means of a spring or strip, G, of metal or other suitable material, whereby the closing-power of the spring on the door is gradually decreased as the latter is opened; also, in the employment of a start or lever, *i*, attached to the inner edge of the door, in combination with the spring-strip G, which, when the door is wholly open, as in Fig. 2, assists in starting the door to close, the spring and lever combining to produce the desired result.

To enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

A A are the jambs; B B, the casings; D, the door; *h h*, the hinges.

C is a flat piece of metal, cast with two starts, C′ C′, as shown in Figs. 1 and 3.

In and through the jamb is a hole, J, (see Fig. 1,) to admit the spring and its appendages, the face-plate C being confined to the jamb by means of screws *s s*, as shown in Fig. 2.

E (the shape of which is clearly shown in Figs. 1 and 3) is an arm, vibrating in the arc X, on the pivot *d* between the starts C′ C′.

K is a spiral spring passing round the cylindrical shank of the arm E, one extremity of said spring being attached to the start *j* on the concave side of E, and the other to the pin *o* in the lower start C′, as represented in Fig. 3. The design of the spring *k* is to force the arm E in the direction of the arrow in Fig. 1.

G is a strip or spring, of metal or other suitable material, one end of which is fastened round the pin *f*, from which it passes round the convex side of the arm E, through the hole *l* (see Figs. 2 and 3) in the corner between the lip *m* and the plate C, and back of the plate I on the door, where the end, being turned to a right angle, enters a slit in the door, by means of which and the screws *r r*, that confine the plate I to the door, it (G) is securely held in place.

On one side of the strip I is a start or lever, *i*, as represented in Figs. 1 and 2, which lever, projecting beyond the edge of the door, and swinging in the arc *y*, assists in starting the door to close when entirely open, the spring G also assisting in producing the same result. The start *i* also protects the spring G from a too sudden strain on the corner of the door.

Thus it will be seen that the closing-power of the spring on the door will gradually increase as the door closes, and vice versa as it opens, being in this respect a great improvement over springs in general use, whose tension greatly increases as the door is opened, producing a consequent slam when the door is shut.

My device is cheap, simple, strong, easily attached or detached without removing the jamb or casings, and, when the door is closed, entirely out of sight.

Having thus described the construction and operation of my improvement, what I claim as new, and desire to secure by Letters Patent, is—

1. The vibrating spring-arm E, arranged inside of the jamb and casing, and connected with the corner of the door by means of a metallic strip, G, or its equivalent, substantially as set forth, and for the purpose described.

2. The lever *i*, in combination with the spring-strip G and vibrating arm E, arranged and operating substantially as described.

WILLARD BADGER, JR.

Witnesses:

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