(No Model.)

W. S. BARLOW.

DOOR SPRING.

No. 367,020. Patented July 26, 1887.

Fig. 1.

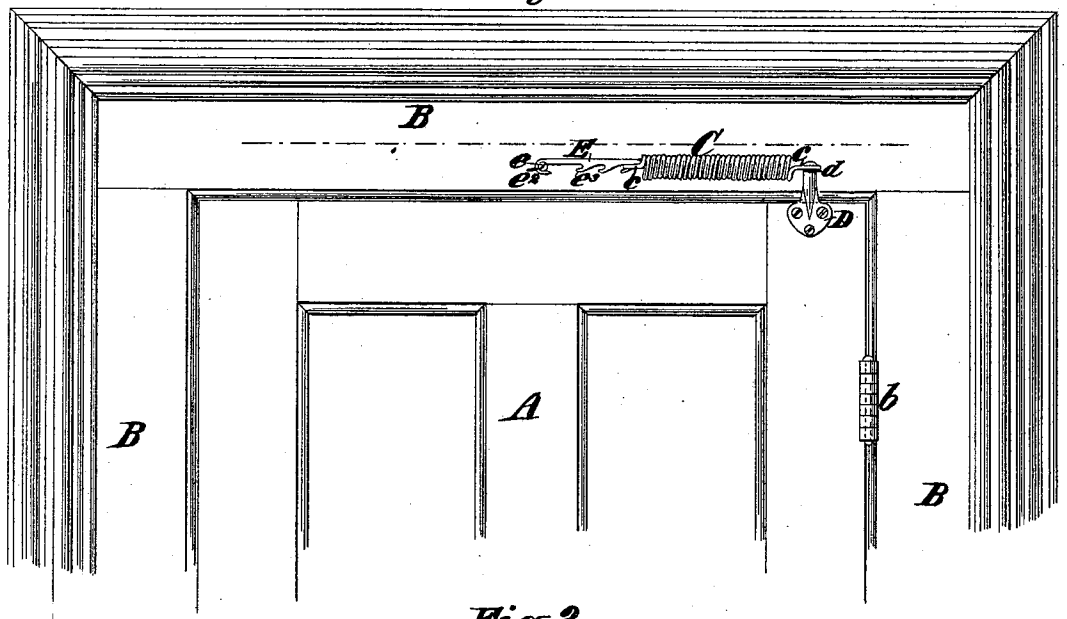


Fig. 2.

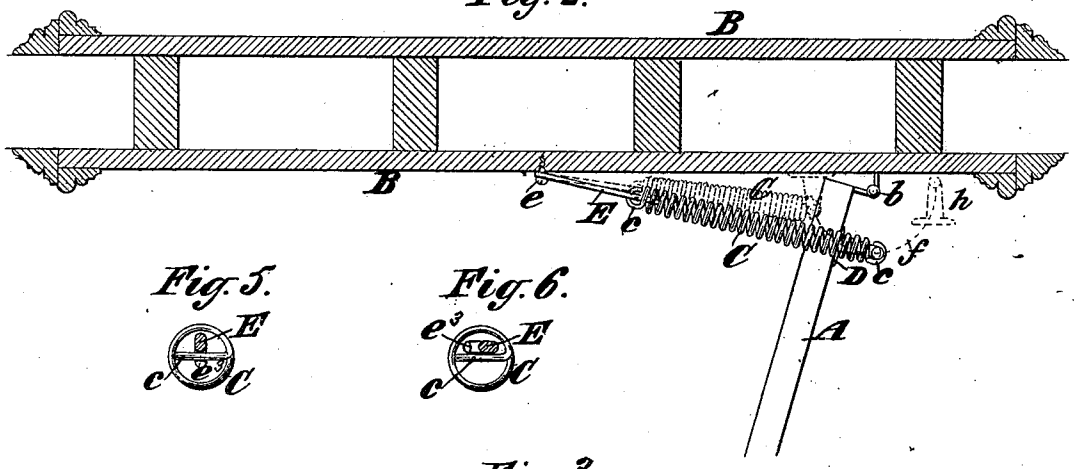


Fig. 5.

Fig. 6.

Fig. 3.

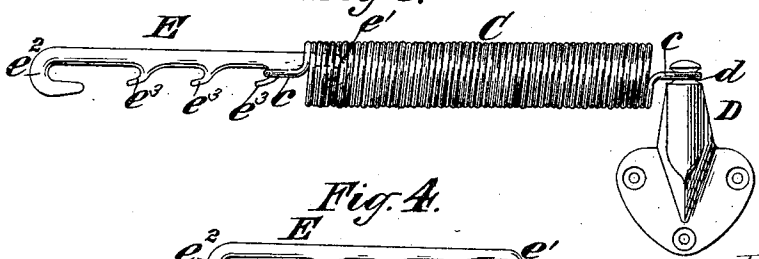
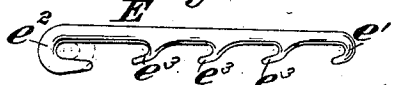


Fig. 4.



Witnesses.
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UNITED STATES PATENT OFFICE.

WARREN S. BARLOW, OF PATERSON, NEW JERSEY.

DOOR-SPRING.

SPECIFICATION forming part of Letters Patent No. 367,020, dated July 26, 1887.

Application filed August 30, 1886. Serial No. 212,167. (No model.)

To all whom it may concern:

Be it known that I, WARREN S. BARLOW, of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Door-Springs, of which the following is a specification.

My invention is more particularly intended for doors, although it may be also employed for screens and blinds; and an important object of my invention is to provide for the closing of a door by means of a spiral spring which is arranged upon the hinge side or opening side of a door, and is attached in such manner that it will be extended by the opening of the door, and will, by its contraction after extension, serve to close the door.

My invention consists in novel combinations of parts, hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation of the principal portion of a door and door frame or casing having my improved spring applied thereto. Fig. 2 is a horizontal section through the upper portion of the casing, showing a plan of the door and door-spring applied thereto. Fig. 3 represents my improved device, upon a larger scale and complete, ready for application to a door. Fig. 4 represents a form of hooked rod which may be advantageously employed for connecting one end of the spring with a door-casing; and Figs. 5 and 6 are end views of the spring, including a transverse section of the hooked rod, and showing such rod in the position to which it is adjusted to slide into the spring and to engage with the bail or loop at the end of the spring.

Similar letters of reference designate corresponding parts in all the figures.

A designates the door, and B the casing or frame, to which the door is hung by hinges *b*.

C designates a spiral spring, which may be made of steel or other metal, and which is so applied to the door and casing that it will be extended by the opening of the door, and will, by its contraction after extension, effect the closing of the door.

The spring and the attachments employed in connection therewith are best represented in Figs. 3, 4, 5, and 6. At opposite ends of the spring are provided loops or bails *c*, which, as here shown, extend diametrically across the end portions of the spring, and one of these loops *c* is adapted to engage with a bracket, D, or other suitable attachment for connecting the spring at one end to the door A. The bracket D here represented has a groove or contracted neck, *d*, which receives around it the loop *c* at the end of the spring, and the spring is thereby held in secure engagement with the bracket D.

At the opposite end of the spring is a connection extending between the end of the spring and a screw or other holding device, *e*, inserted in or secured to the casing B of the door. This connection E is adjustable, so as to provide for varying its operative length between the end of the spring C and the holding device *e*. The spring will in most cases become weakened by wear, and by the employment of an adjustable connection I provide for maintaining the desired force or power in the spring, notwithstanding its becoming weakened; and I also provide for adapting the tension of the spring to the weight of the door on which it is applied.

The connection E consists of a rod provided at opposite ends with hooks e' e^2, which are turned in opposite directions, as best shown in Fig. 4. The hook e' may be engaged with the loop *c* at the end of the spring, and the hook e^2 may be engaged with the screw or other holding device *e* upon the casing. In lieu of making the end portion of the rod which engages with the screw or holding device *e* in the form of a hook, e^2, I may make it in the form of an eye, as indicated by dotted lines in Fig. 4. This rod E may be of cast or other metal, and in order to provide for varying the length of its operative portion between the end of the spring and the holding device *e*, I may provide the rod E with a number of hooks, e^3, formed at intervals in its length and presented in the same direction as the hook e'.

When the spring is first put into use, the loop *c* may be engaged with the hook e', and after the spring is found to be weakened by use the loop *c* may be engaged with the hook e^3 nearest the end, and as the spring becomes still weaker its point of connection with the rod E may be shifted from one to the other of the hooks e^3, in order to shorten the length of the operative portion of the rod E between the point of its connection with the end of the

spring and the end of the rod at which is the hook e^2.

As before stated, the loop or bail *c* may be extended diametrically across the spring, as shown in Figs. 3, 5, and 6, and when the rod E is turned into the position shown in Fig. 6, so that its greatest width will be parallel with the loop *c*, said rod may be readily entered into the spring at one end thereof, and by turning the spring the hooks e^3 may be made to engage the loop *c*, as shown in Fig. 5. It is desirable to have the rod E enter the spring C, because then the pull may be had directly in the axial line of the spring, and the portion of the rod lapping upon the spring will be concealed from view and the neatness of the device enhanced.

In applying the spring to a door the bracket D and the holding device *e* may be, respectively, on the door or casing, or they may be reversed in position. I have here shown the bracket D as on the door and the holding device or screw *e* as on the casing. The bracket D is secured to the door by screws or otherwise at a point forward of the hinges *b*, and the holding device *e* is placed on the casing at a point still farther forward from the hinges. In Fig. 2 I have shown the door A in full lines as in an open position, and I have shown the spring C by dotted lines in the position which it has when the door is closed. In the opening movement of the door the bracket D moves in the path indicated by the dotted arc-shaped lines *f* in Fig. 2, and it will there be seen that by such opening movement the spring C is extended or has its tension increased, so that upon the door being released the contractile tendency of the spring will close it.

It will also be understood from Fig. 2 that if the door A be so placed that it can be swung through an arc of nearly one hundred and eighty degrees the bracket D will pass a line drawn between the point *e* and the center of the hinge *b*, and come to the position shown by dotted lines at *h*, and when brought to such position the tension of the spring C will hold the door open and prevent its closing.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a spiral door-spring, of a rod for connecting one end of the spring with a door or casing, and having at intervals in its length hooks, any one of which may be engaged with the spring, according to the tension required, substantially as herein described.

2. The combination, with a spiral door-spring having at the end a bail or loop, *c*, extending diametrically across it, of a rod for connecting one end of the spring with a door or casing, entering the spring at the end thereof, and having at intervals in its length hooks, which may any one of them be engaged with the bail or loop, said rod being less in thickness than the space between the bail or loop and the inner wall of the spring-coil, so that it may be readily introduced into the coil and then turned to engage its hooks with the bail or loop, substantially as herein described.

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