

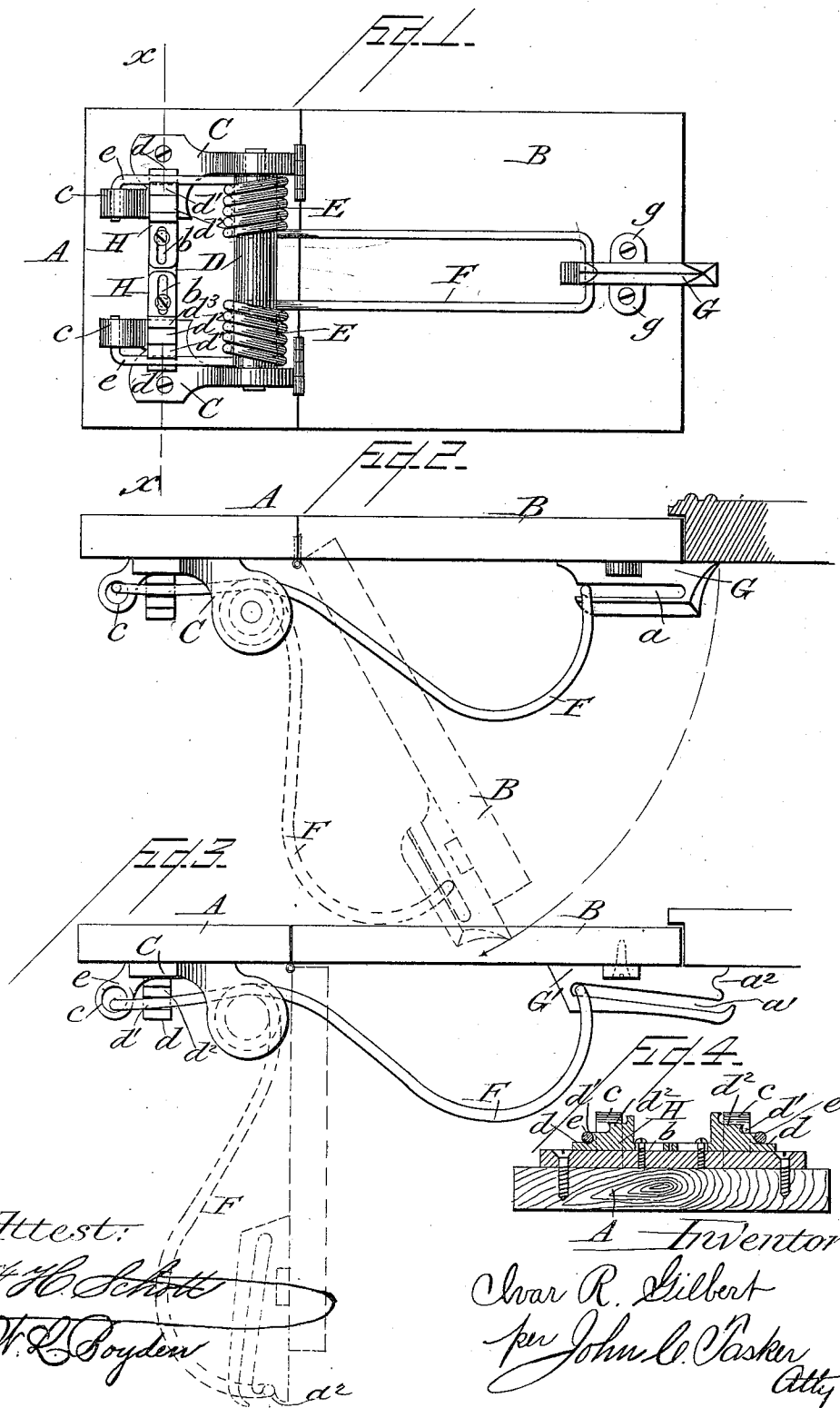
(No Model.)

2 Sheets—Sheet 1.

I. R. GILBERT.
DOOR SPRING.

No. 441,547.

Patented Nov. 25, 1890.



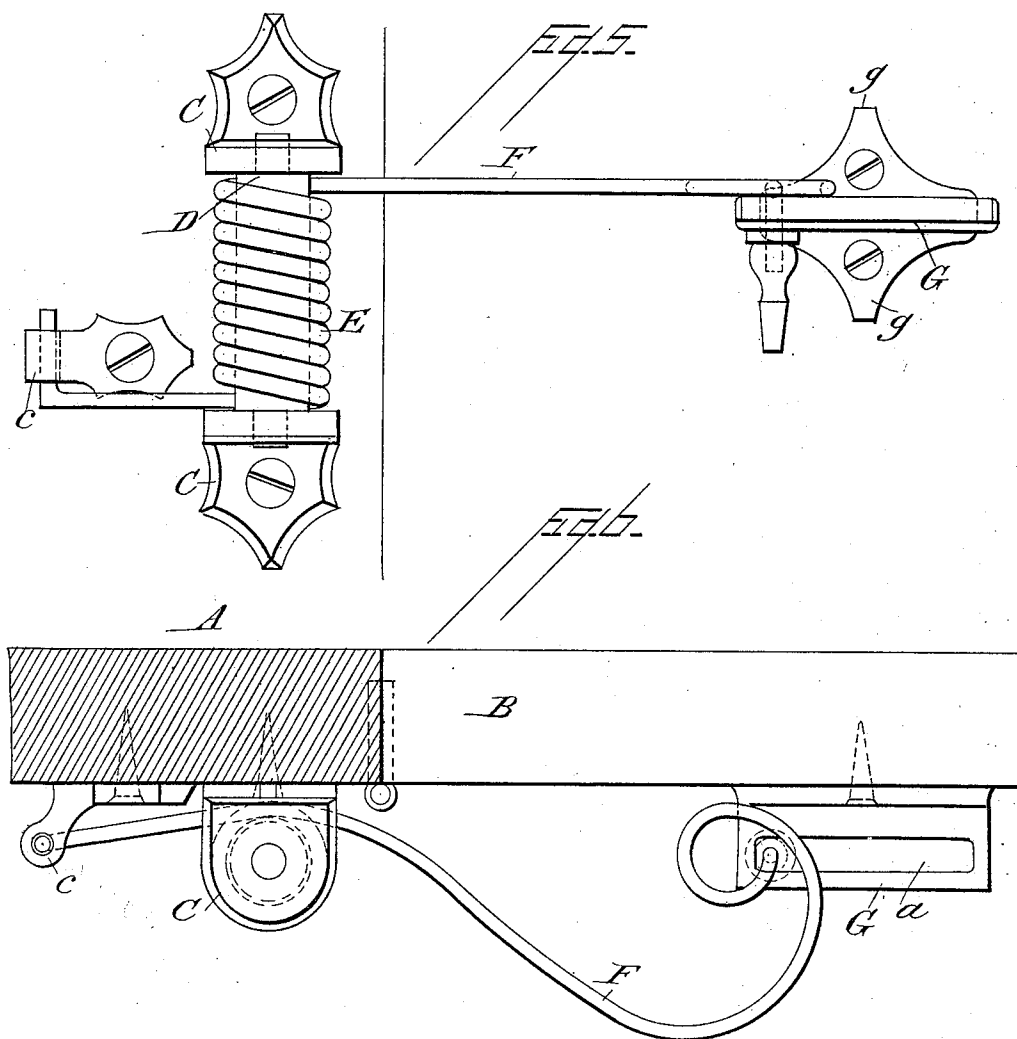
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Attest:

R. H. Schott
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Inventor
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Atty

UNITED STATES PATENT OFFICE.

IVAR R. GILBERT, OF MANCHESTER, NEW HAMPSHIRE.

DOOR-SPRING.

SPECIFICATION forming part of Letters Patent No. 441,517, dated November 25, 1890.

Application filed October 19, 1889. Serial No. 327,502. (No model.)

To all whom it may concern:

Be it known that I, IVAR R. GILBERT, a citizen of the United States, residing at Manchester, in the county of Hillsborough and State of New Hampshire, have 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 appertains to make and use the same.

This invention relates to an improvement in door-springs, its object being to perfect and complete and make more successful the construction of devices of this nature; and to this end the invention consists, essentially, in the construction, arrangement, and combination of the several mechanical parts, substantially as will be hereinafter described, and then more particularly pointed out in the annexed clauses of the claim.

In the accompanying drawings, which illustrate my invention—

Figure 1 is a side elevation of my improved door-spring in operative position on a door. Fig. 2 represents a plan view of the same, showing in full lines the position of the spring when the door is closed and in dotted lines its position when the door is opened. Fig. 3 represents a similar plan view of my improved door-spring, showing in full lines the position of the springs when the door is closed and in dotted lines its position when the door is opened, and indicating a modification in the structure of the slotted bar, which is engaged by the movable end of the spring. Fig. 4 is a transverse section on the line *xx* of Fig. 1, and shows in detail the device for increasing the tension of the spring. Fig. 5 is a side view of a modification showing a single spring, and Fig. 6 is a plan of the same.

Like letters of reference designate corresponding parts throughout all the different figures of the drawings.

A denotes a section of a door-jamb or post, and B denotes a section of a door, which is hinged to said jamb in the usual and ordinary way.

My improved spring is applicable to any kind of a door, and hence the door delineated in the drawings is taken by way of example

only, in order to illustrate the practical application of the invention.

C C denote brass or other metallic castings that are secured to the door-jamb or post, said castings being preferably horizontal and parallel. Each of the castings C is provided with an eye *c*, said two eyes being located in vertical line with each other. In the said castings is likewise mounted a vertical rod, bar, or roller D, which has its upper end in the upper casting C and its lower end in the lower casting C, as is clearly indicated in Fig. 1.

The spring proper which is employed in my invention is coiled about the rod D at two points to provide the coiled portions E E. The spring has also the elongated looped portion F, which extends across the face of the door a greater or less distance, and is preferably curved so that its concaved side is next to the door. The ends *ee* of the spring, which ends extend horizontally from each of the coils E E, are bent at a right angle and caused to enter the eyes *cc* of the castings C C. It will thus be seen that the whole of the double spring just described is made of a single piece of wire, which is bent into the form of the elongated curved loop F, after which the ends are coiled around the rod D to make the spirals E E, and then the right-angled ends of the wire are securely fastened and held by being inserted into the rigid eyes on the casting.

Although I preferably use the form of spring just detailed, yet I do not desire to be restricted to this precise form of the spring, as other forms will do as well for carrying into effect the purposes of the invention and accomplishing its paramount objects. Hence I can use a single spring, as shown in Figs. 5 and 6, equally well with the double spring upon a door where so great a tension as that possessed by the double spring is not required.

To the door, as B, at a suitable distance from the hinged edge thereof, is secured a horizontal bar or casting of greater or less length, as may be desired, and made of brass, iron, or other suitable metal or substance, said bar being preferably provided with projecting ears *g g*, through which pass attaching-screws, whereby the bar is firmly fastened

to the door. Other means of securing the bar may be adopted, if preferred. This bar is longitudinally slotted at *a*, the end of the slot nearest the hinged edge of the door being open to receive the end of the loop F. When the door is closed, the end of this loop F will lie within the slot close to the open end thereof, as shown in Fig. 2. When the door is opened a certain distance, the end of the loop will occupy a position farther in the slot, as shown in dotted lines in Fig. 2. This slotted bar serves to keep the end of the spring in proper position and yet afford it ample freedom of movement. It is obvious that, with the spring arranged in the manner that I have specified, when the door is opened the coils of the spring will be compressed or wound more tightly, and hence a strong force will be exerted upon the face of the door to return the latter to position when it is to be closed.

When the slotted guide-bar is made in the form shown in Figs. 1 and 2, it is not so constructed as to permit of any engagement thereof on the part of the spring as will hold the door permanently open. In Fig. 3, however, I have modified the construction of the slotted bar so that after the door has been opened its full width the spring will operate to engage the end of said bar, and thus the door be kept open and prevented from closing. *G'* represents this modified form of the slotted guide-bar. It has a slot *a'* therein which is preferably slightly inclined. The open end of this slot is away from the hinged edge of the door instead of being nearest thereto, as in Fig. 2. Thus it will be perceived that the modified form of the guide-bar is reversed in position or turned end to end from what it is in Fig. 2. Furthermore, the end of said bar adjacent to the open end of the slot *a'* is formed with a notch, loop, or indentation *a²*, which is adapted to receive the end of the spring-loop F when the door has been opened its full width. In dotted lines in Fig. 3 the spring-loop F is shown as engaging the indented end of the guide-bar. It is evident that as the door continues to turn upon its hinges in opening the end of the loop F will ride along the slot *a'* until it finally drops into the notch *a²*, and the door is in consequence locked in its open position.

In order to increase the tension of the spring when it may be desired to make said spring stronger for any purpose—as, for instance when the door is exceedingly heavy—I provide a device composed of a slide-bar II, having a slot *b* therein, through which projects a screw, pin, or other projecting device fixed in the

door-jamb. When the double spring is employed, I will have the slide-bar II for each of the right-angled ends *e* of said spring. (See Fig. 1.) Each slide-bar is formed with a series of steps *d d' d²*. The step-provided bar is thus adapted to slide beneath the end of the spring, and, acting as a sort of wedge, lifts said spring end, and thus increases the resilient force of the spring. It is obvious that the spring will be stiffer when the step *d²* is underneath the end *e* than when the step *d'* is underneath it, and also that the step *d'* will of course increase the tension more than the use of the step *d*. The slot and screw for the slide-bar enable it to be accurately guided in its movements and serves to keep it in position.

Not only may the single spring be employed in lieu of the double spring, as herein stated, and also the modified form of the slotted guide be substituted for the simpler and more common construction thereof, but I conceive that certain other changes in the structural details and the relative arrangement and precise form of the mechanical parts which I have united together for the purpose of constructing my improved door-spring may be varied or differently situated or shaped in order to gain the most advantageous results in the practical employment of the invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a door-spring, in combination with the spring, the tension device consisting of a slide-bar having a series of steps, as set forth.

2. In a door-spring, in combination with the coiled springs having right-angled ends which enter a rigid projection, the slide-bar having a series of steps and adapted to pass under the end of the spring, substantially as and for the purpose described.

3. The combination, in a door-spring, of the spring consisting of the elongated loop F, the wire coils E E, and the right-angled ends *e e*, the castings C C, having the eyes *c c* to receive the spring ends, the rod D, the tension devices II II, each provided with a series of steps, and the longitudinally-slotted guide device G, receiving the end of the loop F, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

IVAR R. GILBERT.

Witnesses:

GEO. H. WARREN,

HENRY E. BURNHAM.