(No Model.)

F. W. TOBEY.

DOOR SPRING.

No. 410,047. Patented Aug. 27, 1889.

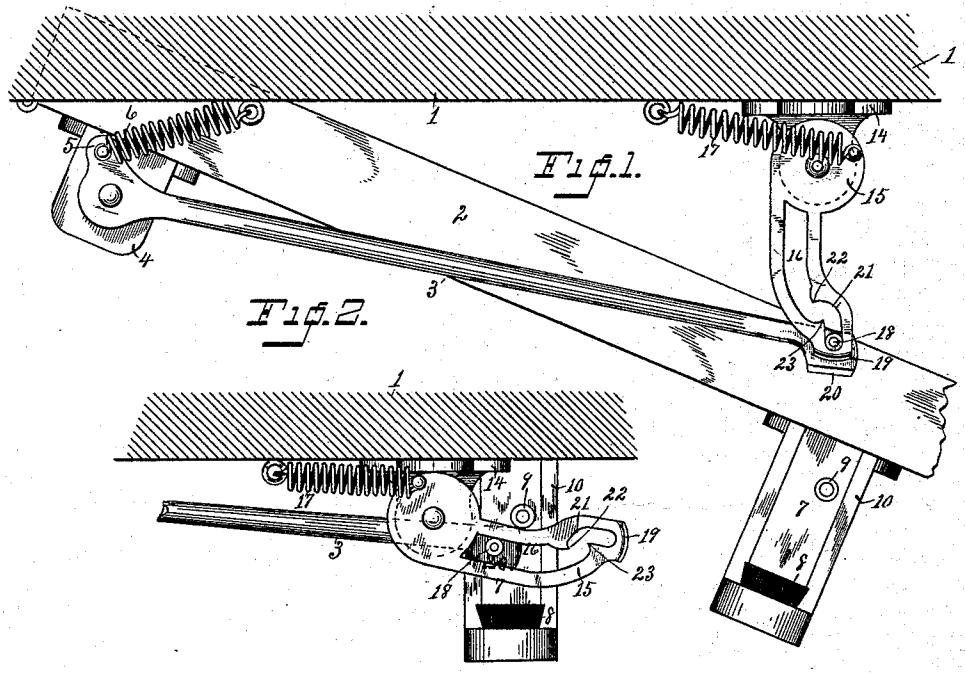


Fig. 1.

Fig. 2.

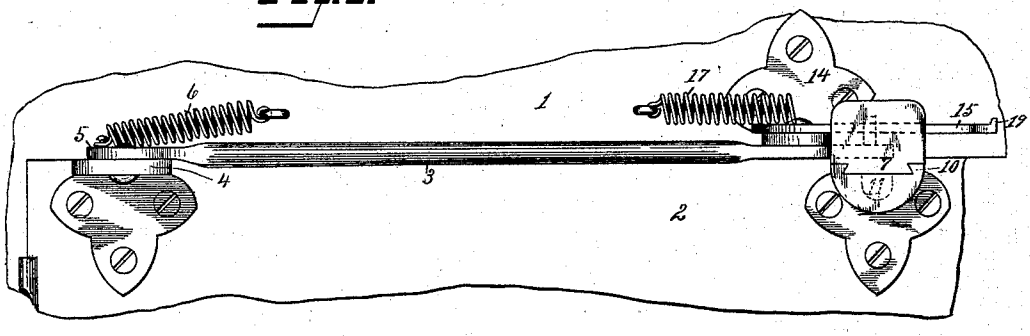


Fig. 3.

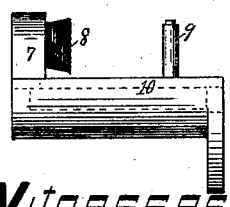


Fig. 4.

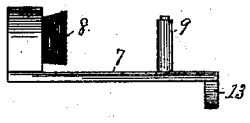


Fig. 5.

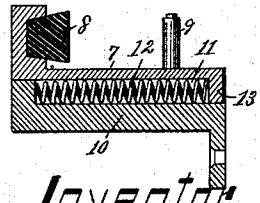


Fig. 6.

Witnesses
C. M. Newman,
Bertha E. Lee.

Inventor
Fred W. Tobey
By A. M. Wooster
Atty

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

FRED W. TOBEY, OF WATERBURY, CONNECTICUT.

DOOR-SPRING.

SPECIFICATION forming part of Letters Patent No. 410,047, dated August 27, 1889.

Application filed November 26, 1888. Serial No. 291,880. (No model.)

To all whom it may concern:

Be it known that I, FRED W. TOBEY, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Door Checks and 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.

My invention has for its object to produce a combined door closer and buffer which shall be so constructed that when the door has been carried nearly to the closed position its movement shall be checked for an instant, and then the door will be gently latched, the action being performed entirely through the agency of springs and a closing-lever, thereby dispensing with air and fluid cylinders.

With these ends in view my invention consists in the novel construction which I will now describe, referring by numbers to the accompanying drawings, forming part of this specification.

Figure 1 is a plan view of a door with my novel closer and buffer applied, the jamb being in section and the door in a partially-closed position. Fig. 2 is a similar view, the door being in the closed position; Fig. 3, a side elevation of the upper portion of a door and a portion of the jamb, showing the manner in which my invention is applied, the door being in the closed position, as in Fig. 2; Fig. 4, an elevation of the slide holder and buffer detached; Fig. 5, an elevation of the slide removed from the holder; and Fig. 6, a longitudinal section of the holder, slide, and buffer.

1 denotes the jamb, 2 the door, and 3 the closing-lever, which is pivoted to a bracket 4, secured to the door near the upper inner corner thereof. The closing-lever is provided at its inner end with an arm 5, extending inward toward the door at an angle to the body of the lever.

7 denotes a slide carrying a buffer 8 and a guide-roller 9. This slide is dovetailed in a holder 10, which is provided with a socket 11 to receive a spring 12, the outer end of which bears against a flange 13 at the rear end of the slide. The slide-holder is secured to the door near the upper edge thereof, as shown in Figs. 1 and 3.

14 denotes a bracket upon the jamb, and 15 a lever pivoted thereto and provided with a curved slot 16. A spring 17, connected to the jamb and to lever 15 inside of its pivotal point, acts to throw said lever around with its outer end toward the outer edge of the door, as shown in Fig. 2. At the outer end of the closing-lever is a pin 18, which engages the slot in lever 15. This pin is preferably provided with a roller, as shown in the drawings. The outer end of lever 15 is provided with an upturned flange 19, and the outer end of lever 3 is provided with a flange 20, which is substantially parallel with flange 19, but is in a lower plane, as will be apparent from Fig. 2 of the drawings.

The operation is as follows: Suppose the door to be in the closed position, as in Figs. 2 and 3. As the door is opened, guide-roller 9 will act against the power of spring 17 to carry lever 15 around from the position shown in Fig. 2 to that shown in Fig. 1, pin 18 moving along in slot 16 until it has reached the outer end of the slot, as shown in Fig. 1, in which position it is retained by the action of spring 6. The continued opening of the door is effected against the power of both springs. As the pivotal point of the closing-lever is moved away from the jamb, spring 6 will be distended. It will likewise be seen that the rear end of the closing-lever is not only moved away from the jamb, but is also swung around toward the left, as seen in Fig. 1. Lever 15, therefore, to which the outer end of lever 3 is connected, must also be swung around toward the left, this action taking place against the power of spring 17. As soon as the door is released, both springs act to throw it toward the closed position, this action continuing until the buffer, which may be either a solid piece of rubber, as shown in the drawings, or a suitably-arranged spring or springs, comes in contact with flange 20 upon the closing-lever. This blow of the buffer upon flange 20 throws the closing-lever inward until pin 18 is checked by the curve in slot 16, which I have designated by 21. An instant later the buffer strikes flange 19 upon lever 15. This flange being rigid checks the

door and causes it to rebound slightly. Spring 17, acting at the same instant, however, swings lever 15 toward the right, as seen in Fig. 1, and causes pin 18 to pass out of the curve and travel down slot 16, meanwhile, of course, carrying the door to the closed position, as shown in Fig. 2, this action of spring 17, which I term the "latching-spring," being gentle, so that the door is closed without any slam whatever. Point or projection 22, which partially obstructs slot 16, acts to prevent the possibility of pin 18 at the end of the closing-lever passing down the entire length of the slot when the buffer engages flange 20, and point or projection 23 prevents the possibility of said pin being drawn to the outer end of said slot again by the power of spring 6 at the instant the door rebounds, and before spring 17 can act to draw the slotted lever around to the position shown in Fig. 2.

It will of course be understood that the details of construction may be varied within reasonable limits without departing from the spirit of my invention.

I claim—

1. A door closer and buffer consisting, essentially, of a closing-lever carried by the door and having an angle-arm, and a slide having a buffer and a roller, also carried by the door, a lever 15, pivoted to the jamb and having a slot engaged by the outer end of the closing-lever, and springs connected to the jamb and respectively to the angle-arm and to the base of lever 15 within the pivotal point of said lever, substantially as described.

2. The closing-lever having an angle-arm, a spring 6, connected to said angle-arm and to the jamb, a slide carried by the door and having a buffer and a roller, and a spring 12, which controls the movement of said slide, in combination with a lever 15, pivoted upon the jamb and having a slot engaged by the outer end of the closing-lever, and a spring 17, connected to lever 15 within its pivotal point and to the jamb.

3. The closing-lever pivoted to the door and having an angle-arm and a spring 6, connected to said angle-arm and to the jamb, in combination with a slide upon the door carrying a buffer and roller, lever 15, having a slot 16, with inward projections 22 and 23, for the purpose set forth, and a spring 17, connected to the jamb and to the base of lever 15 within its pivotal point.

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

FRED W. TOBEY.

Witnesses:
J. LITTLE,
F. M. PEASLEY.