(No Model.)

W. H. BROWN.

DOOR SPRING.

No. 363,361. Patented May 24, 1887.

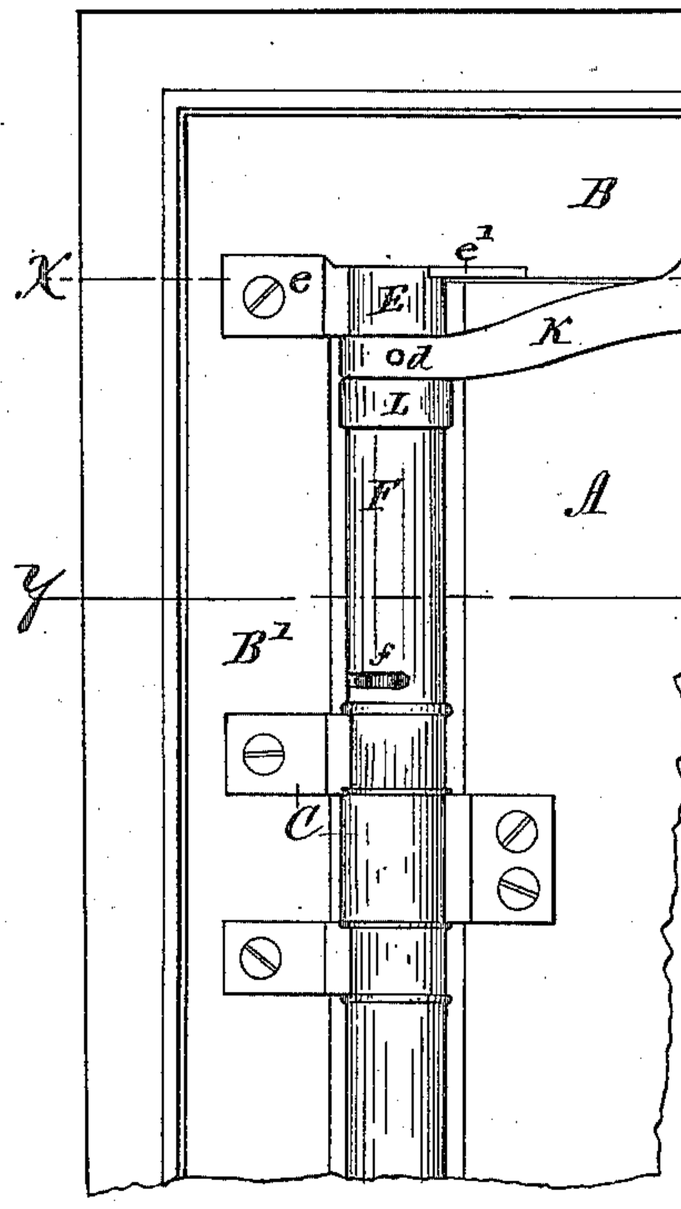

FIG. 1.

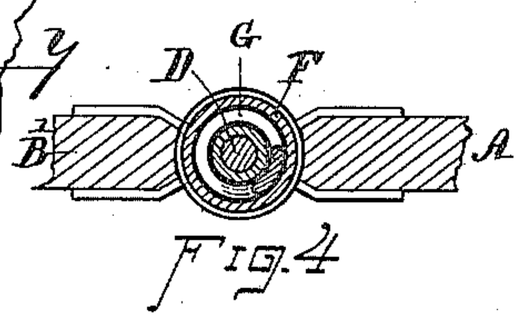

FIG. 4.

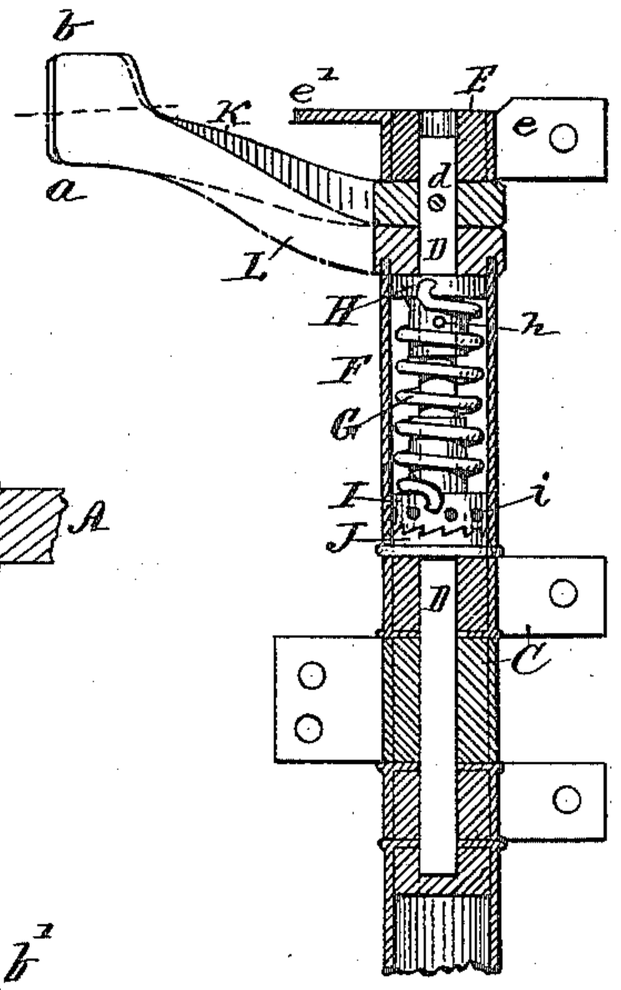

FIG. 3.

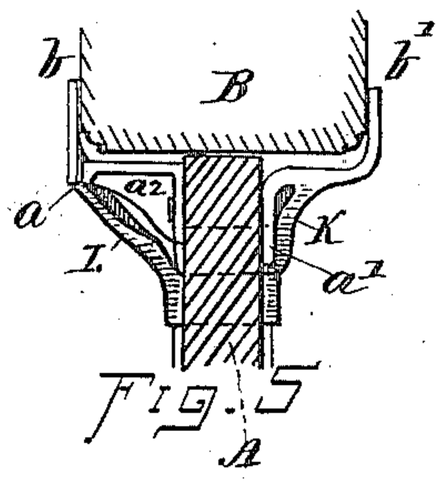

FIG. 5.

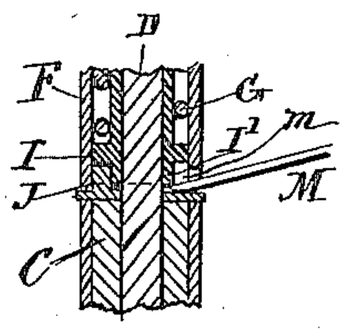

FIG. 7.

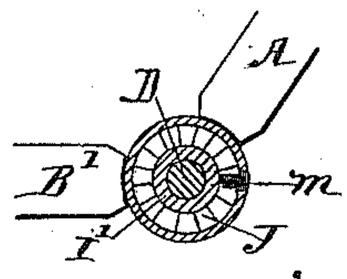

FIG. 6.

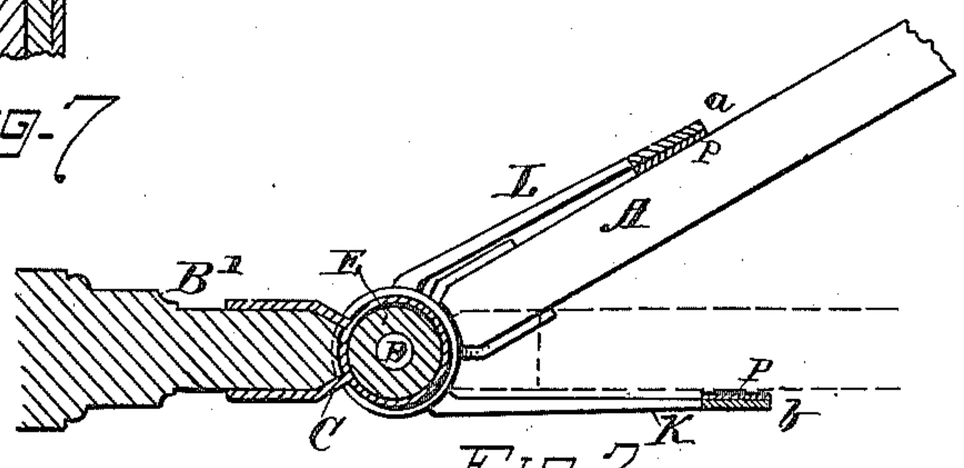

FIG. 2.

WITNESSES.

Frank L. Wheeler.

Ella P. Blenus

INVENTOR

William H. Brown

By Chas. H. Burleigh

Attorney

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

UNITED STATES PATENT OFFICE.

WILLIAM H. BROWN, OF WORCESTER, MASSACHUSETTS.

DOOR-SPRING.

SPECIFICATION forming part of Letters Patent No. 363,361, dated May 24, 1887.

Application filed September 30, 1886. Serial No. 214,955. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. BROWN, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Door-Springs, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

The object of my present invention is to provide a convenient and practical spring for closing doors which swing in one or both directions, and which will retain the door at the proper position. The particular features of improvement claimed are hereinafter definitely specified.

In the drawings, Figure 1 is a side view showing my improved door-spring. Fig. 2 is a horizontal section at line *x x*. Fig. 3 is a vertical sectional view showing the internal arrangement. Fig. 4 is a horizontal section at line *y y*. Fig. 5 shows modifications in the bearing ends of the pressure-arms. Fig. 6 is a horizontal section at the top of the ratchet. Fig. 7 is a vertical section showing the manner of letting off the strain of the spring.

In my improved door-spring for double swinging doors I employ two arms, one of which connects with the spring-inclosing cylinder and the other with the axial pin or central shaft, and the spring is strained for acting on both said arms, which are pivoted or arranged to swing on the same axis or coincident with the hinging of the door. The pressing ends of the arms or levers are made so as to take bearing both against the door and against the frame or lintel at the top of the door, so that the door will be brought to a central position and then relieved from the pressure in that direction, to be acted upon by the opposite pressing-arm when swung past the center or opened in the opposite direction.

In the drawings, A indicates the door; B, the lintel or top frame; B′, the upright, to which the door is connected by the hinge C, which hinge is in the present instance made to swing in both directions.

D denotes the central shaft or axial pin of the hinge and spring mechanism.

E is a top bearing for the axial pin or shaft, secured to the frame by screws through the ears *e e′*.

F denotes the spring-inclosing cylinder, and G indicates the spring which is coiled about the axial pin within the cylinder, with its ends respectively connected with said cylinder and axial pin in such manner that the force of the spring will be exerted for rotating said parts in opposite direction. In the present instance the ends of the spring are connected to thimbles H and I, respectively. The thimble H is fixed to the center shaft by a pin, *h*, and the thimble I is provided with a series of ratchet-teeth, that mesh with corresponding teeth on the end of the block J, fixed in the end of the cylinder.

An arm, K, is fixed to the center shaft, D, by a pin, *d*, and a similar arm, L, is rigidly attached to the top end of the inclosing-cylinder F. These arms extend out along the top of the door, and their extremities or bearing ends are spread or formed in a manner to span the joint and to bear against the door, as at *a*, and also against the lintel, as at *b*, so that when the door is opened only that arm which is on the side toward which the door swings is affected, the other arm remaining and holding the pressure against the lintel. Thus, as in Fig. 2, the door being opened in the direction indicated, the arm L is pressed back by the door, while the arm K remains stationary against the lintel; but, if opened in the opposite direction, the arm K would be pressed back, while the arm L would remain stationary against the lintel. Thus each arm under control of the spring serves to bring the door back to central position from the respective sides, and the two arms together serve to retain it in line with the lintel, and the adjustment of the mechanism is required, as the pressure of the arm ceases to act upon the door as soon as the arm strikes the lintel.

In cases where the lintel is of greater thickness than the door, the bearing end of the arm may be bent or crooked, as at *a′ b′*, Fig. 5; or a blocking or bracket, a^2, reaching out to the lower part, *a*, of the arm, may be fixed to the door, as indicated at the opposite side of Fig. 5.

For allowing the spring to be strained to a greater degree of tension, a slot, *f*, is formed in the side of the cylinder F, and a series of holes, *i*, are formed in the thimble I, so that

said thimble can be turned to take on additional ratchet-teeth.

For letting down the tension of the spring, the thimble I is made with a downwardly-extending hub, I′, that passes down within the block J, (see Figs. 6 and 7,) and the block J is provided with a slot, *m*, which matches with a slot in the lower end of the cylinder F at a position behind the end of the door, so that by swinging the door to one side a small bar, M, can be inserted beneath the hub I′, as indicated in Fig. 7, and the thimble therewith raised sufficiently to disengage the ratchet-teeth and allow the spring to uncoil.

If desired, pads of felt or other suitable material may be placed under the end of the arms K and L where they bear against the door and lintel.

For doors which open only in one direction the door-spring could be made with only one of the arms K or L, said arm being made to swing on the same axis as the hinge of the door, so that the bearing end of the arm will move in the same circle of motion, or concentric with the swinging of the door, so that no sliding of the end of the lever against the surface of the door occurs. This avoids the necessity of a bearing plate or roll, as there is no wearing or friction at the point of contact. The hinging axis may be at one side instead of at the central plane of the door; but I prefer to have it central for double swinging doors, or those that open in either direction.

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

1. The combination, with the door A and lintel B, of the pressure lever or levers swinging on a center spindle, D, axially coincident with the hinging axis of the door, said lever having its pressing end *a b* extended to bear against both door and lintel, and the coiled-wire actuating-spring disposed around said axial spindle and adapted to swing said lever in opposition to the opening movement of the door, substantially as shown and described.

2. The combination of the levers K and L, the shaft D, cylinder F, thimbles H and I, spring G, and ratchet-block J, substantially as described.

3. The combination of the hinge C, cylinder F, pivot-shaft D, arms K and L, having ends adapted to embrace the door and lintel, as at *a b*, and the spring G, substantially as set forth.

4. The ratchet-block J, provided with the slot *m*, in combination with the thimble having the hub I′, the spring G, and slotted cylinder F, substantially as and for the purpose set forth.

Witness my hand this 27th day of September, A. D. 1886.

WILLIAM H. BROWN.

Witnesses:
CHAS. H. BURLEIGH,
ELLA P. BLENUS.