No. 674,678. Patented May 21, 1901.

G. W. GERAN.

DOOR SPRING.

(Application filed Jan. 9, 1901.)

(No Model.)

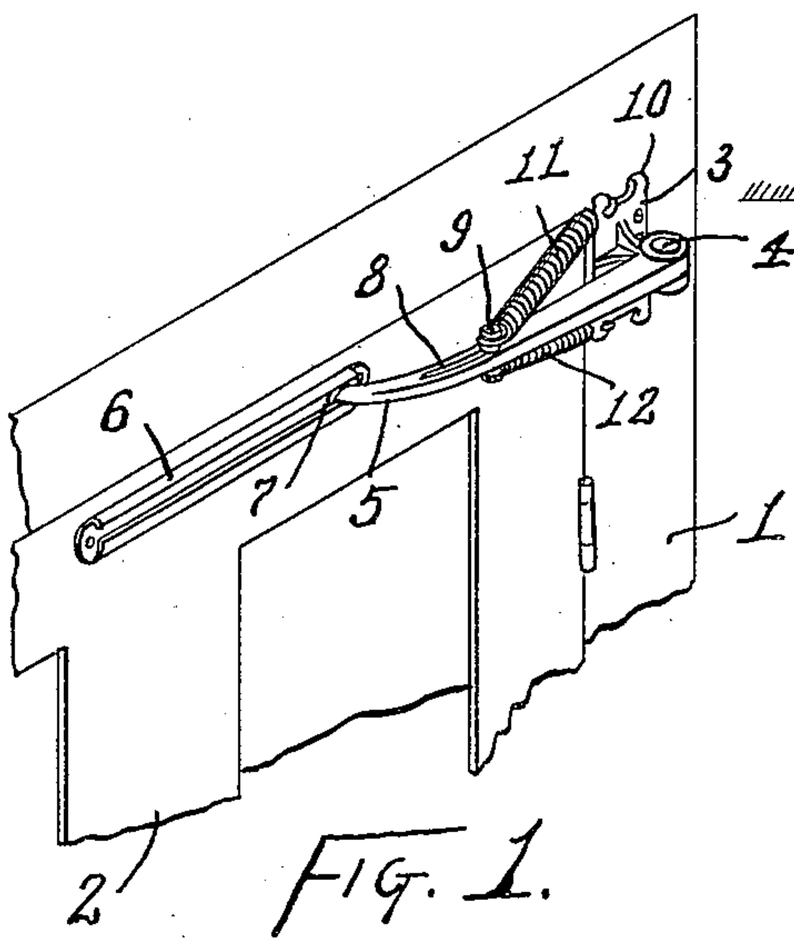

FIG. 1.

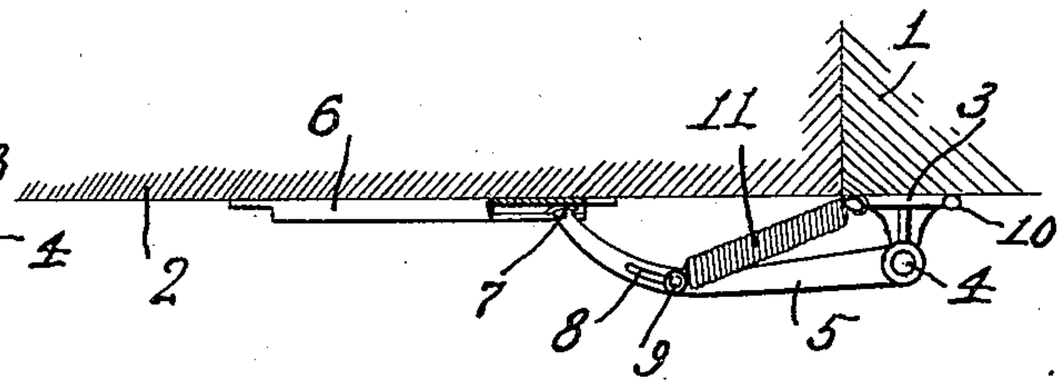

FIG. 2.

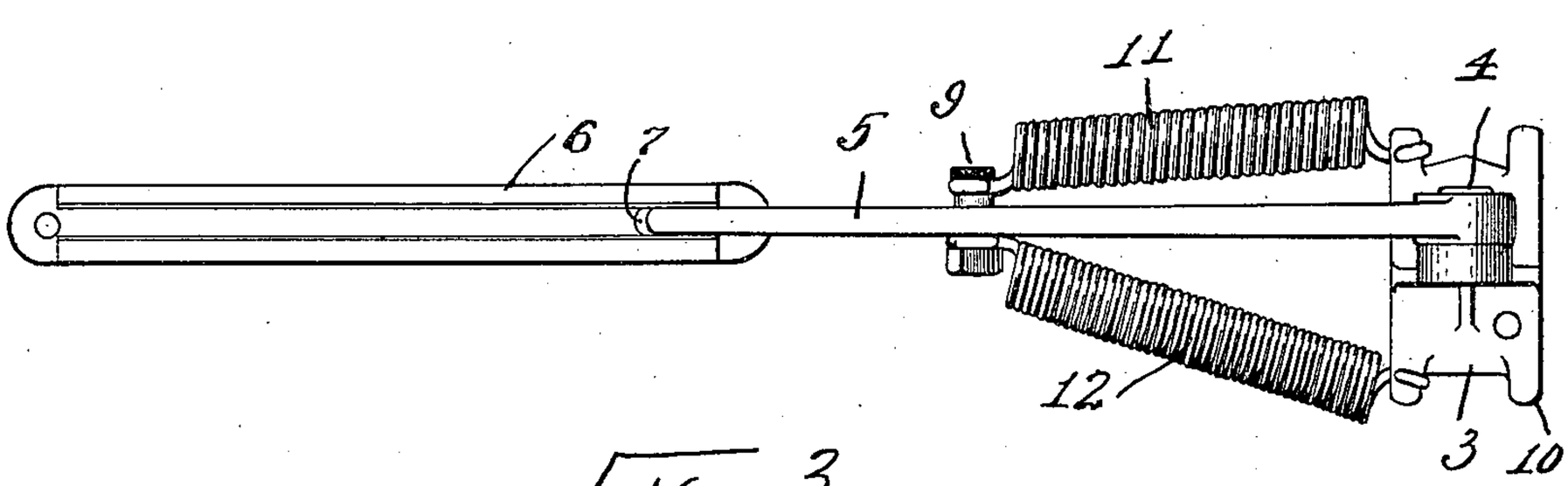

FIG. 3.

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UNITED STATES PATENT OFFICE.

GEORGE W. GERAN, OF MIDDLETOWN, OHIO.

DOOR-SPRING.

SPECIFICATION forming part of Letters Patent No. 674,678, dated May 21, 1901.

Application filed January 9, 1901. Serial No. 42,589. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. GERAN, of Middletown, Butler county, Ohio, (post-office address Middletown, Ohio,) have invented certain new and useful Improvements in Door-Springs, (Case B,) of which the following is a specification.

This invention, pertaining to door-springs, will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a perspective view of a portion of a door and door-frame having my improved spring attached; Fig. 2, a plan of the spring, and Fig. 3 a front elevation of the spring upon an enlarged scale.

In the drawings, 1 indicates the door-frame; 2, the door, the door and frame being viewed from the hinge side and the door appearing in closed position; 3, a bracket secured to the face of the door-frame; 4, a pivot carried by the bracket with its axis parallel with the axis of the door-hinges, the pivot being disposed outwardly eccentric to the axis of the door-hinges; 5, an arm, with its heel mounted upon pivot 4, the body of the arm projecting along the face of the door and its inner end being inwardly curved, so as to tend to lie against the door; 6, a lipped runway secured against the face of the door in the horizontal plane of arm 5, the inner end of the arm playing longitudinally within the runway; 7, a button-head upon the inner end of arm 5, engaging within the runway 6, the inner face of the button-head being convex, so as to permit rocking of the end of the lever within the runway and the rear faces of the button-head catching behind the lips of the runway; 8, a slot through the body of arm 5; 9, a clamp-bolt secured in slot 8 at selective point in the length of the slot; 10, four hook-lugs, one projecting from each corner of the plate of bracket 3, two of these lugs being at one side and two of them at the other side of the vertical plane of pivot 4; 11, a helical spring disposed above arm 5 and having one of its ends hooked to clamp-bolt 9 and its other end hooked to one of the upper lugs of bracket 3; and 12, another helical spring similarly disposed but below arm 5.

As seen in Fig. 2, the tendency of spring 11 is to hold the inner end of the arm firmly against the door, and consequently to hold the door closed. If the door be opened, then arm 5 will be rocked back upon its pivot, the button on the inner end of the arm sliding lengthwise in the runway. This outwardly-swinging motion of the arm, as enforced by the opening of the door, is resisted by the tension of spring 11. Consequently the door is opened against spring tension and the tension of the spring tends to reclose the door. As the opening motion of the door continues the outer end of the spring swings around until finally a line through its two end attachments coincides with the vertical plane of pivot 4, at which time the effect of the spring will be *nil*, and when the door is still farther opened then the tendency of the spring is to open the door still farther and to hold it open. Thus while the spring is a door-closing spring it becomes a door-opening and door-holding spring after the door has been opened a certain distance. In Fig. 2 the spring 11 is shown as being attached to the bracket-lug nearest the door. Under these conditions the line of the spring will reach the neutral point of spring action at a certain stage in the door-opening motion. If, however, the heel of the spring be attached to the bracket-lug farther away from the edge of door, then the neutral point will be reached earlier and the door need not be opened so far as before in order to have the spring become effective as a door-opening spring. Thus in the winter-time if it is desirable that the door be never held open the inner bracket-lug may be employed, and in the summer the outer bracket-lug may be employed.

The bracket by having lugs at each of its sides becomes available for right or left hand doors. The convex face of the button-head of the arm permits rocking to take place freely in the runway as imposed by the eccentricity of pivot 4 to the hinge-axis of the door, and the forward engagement of the lips of the runway over the button-head causes the arm to become effective when acting to hold the door open. By adjusting clamp-bolt 9 to selective position along in slot 8 the tension of the spring may be adjusted.

When spring 11 alone is employed, as has been thus far assumed, there is a diagonal upward pull upon arm 5, interfering with

its freedom of action on its pivot and in the runway. The provision of the second spring 12 below the arm serves in practically nullifying these disturbing strains. The double-spring arrangement also serves in greatly extending the range of adjustment of spring tension. It is to be observed in Fig. 3 that spring 11 is a heavier spring than spring 12. For a very heavy door both springs may be heavy or strong, and for lighter doors there may be a heavy spring and a light one, or two light ones, or a single heavy one, or a single light one.

In Fig. 1 the apparatus is illustrated as being disposed very near the top of the door; but its action is the same if disposed at any point in the height of the door.

I claim as my invention—

1. In a door-spring, the combination, substantially as set forth, of a bracket carrying a vertical pivot and having lugs at each side of the vertical plane thereof, a lipped runway adapted to be secured to the face of the door, an arm having its heel pivoted to said bracket and having its free end provided with a button-head engaging said runway, and a helical spring having one end connected to an intermediate portion of said arm and having its other end adapted to engage either of said lugs of the bracket, substantially as described.

2. In a door-spring, the combination, substantially as set forth, of a bracket carrying a vertical pivot and having lugs projecting, respectively, above and below the plane thereof, a lipped runway adapted to be secured to the face of the door, an arm having its heel pivoted to said bracket and having its free end provided with a button-head engaging said runway, and helical springs each having one end connected, respectively, to the opposite sides of said arm at intermediate portions thereof, and having their opposite ends adapted to engage, respectively, the upper and lower lug of said bracket, substantially as described.

3. In a door-spring, the combination, substantially as set forth, of a bracket carrying a vertical pivot and having a plurality of lugs without the plane thereof, a lipped runway adapted to be secured to the face of the door, an arm having its heel pivoted to said bracket and having its free end provided with a button-head engaging said runway, a clamp-bolt mounted adjustably in an intermediate portion of said arm, and a pair of helical springs engaging said clamp-bolt and lugs and disposed above and below said arm, respectively, substantially as described.

4. In a door-spring, the combination, substantially as set forth, of a bracket carrying a vertical pivot and having a plurality of lugs without the plane thereof, a lipped runway adapted to be secured to the face of the door, an arm having its heel pivoted to said bracket and having its free end provided with a button-head engaging said runway, a clamp-bolt mounted adjustably in an intermediate portion of said arm, and a pair of helical springs of dissimilar strength engaging said clamp-bolt and lugs and disposed above and below said arm, respectively, substantially as described.

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