

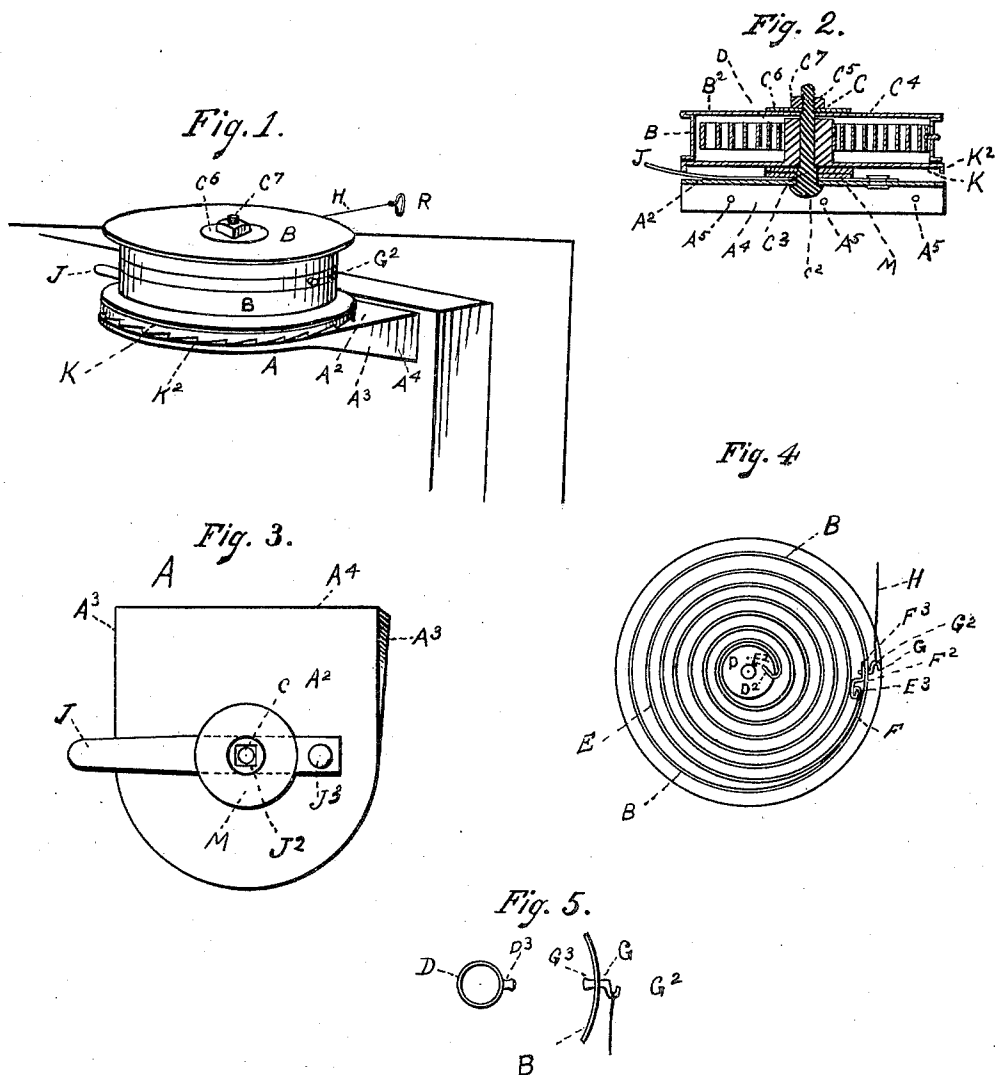
No. 684,742.

Patented Oct. 15, 1901.

D. W. BROMLEY.
DOOR SPRING.

(Application filed July 30, 1900.)

(No Model.)



WITNESSES:
Charles R. Spiegel
H. Smith

INVENTOR.
Daniel W. Bromley
BY *Wm Hubbell Fisher*
ATTORNEY.

UNITED STATES PATENT OFFICE.

DANIEL W. BROMLEY, OF WILMORE, KENTUCKY, ASSIGNOR TO HUGH W. HARRY, OF DALLAS, TEXAS, AND WILLIAM BRADFORD AND CHARLES BRADFORD, OF FLORENCE, KENTUCKY.

DOOR-SPRING.

SPECIFICATION forming part of Letters Patent No. 684,742, dated October 15, 1901.

Application filed July 30, 1900. Serial No. 25,327. (No model.)

To all whom it may concern:

Be it known that I, DANIEL W. BROMLEY, a citizen of the United States, and a resident of the town of Wilmore, in the county of Jessamine and State of Kentucky, have invented certain new and useful Improvements in Door-Springs, of which the following is a specification.

The several features of my invention and the various advantages resulting from their use, conjointly or otherwise, will be apparent from the following description and claims.

In the accompanying drawings, making a part of this application, and in which similar letters of reference indicate corresponding parts, Figure 1 represents in perspective the top end near side of a door-spring embodying my invention and attached to the top of a door and in operation, the top portion of the door and of the adjacent door-frame being shown in outline. Fig. 2 indicates a central vertical section of the door-spring. Fig. 3 is a plan view of the foundation-plate and of the spring-ratchet. Fig. 4 indicates a plan view of the spring and the cylindrical casing which contains it. Fig. 5 illustrates a modification of the means for connecting the ends of the spring to the central arbor or sleeve and to the casing.

I will now proceed to describe my invention in detail.

A indicates a supporting-frame having a tabular surface A^2 and vertical sides A^3 and vertical front end A^4 . The sides A^3 are preferably cut away from front to rear, and any vertical rear end flange is altogether omitted. Through the front vertical flange A^4 are two or more perforations A^5 , through which screws can be passed for suitably securing the frame to the door or other object to which the door-spring is to be attached. It will be observed that this construction of the frame imparts not only strength for supporting the spring above against the strain brought to bear thereon, but also on account of its open form conveniently allows a screw-driver to be inserted at the rear to screw the screws at A^5 into position. Over this platform A^2 and rotatable thereon is a short hollow cylinder B, which performs the function of a box

for its contents and the office of a pulley as to its periphery for the cord to be wrapped around it. This cylinder B is concentric with the platform A^2 . Through the platform A^2 and the cylinder B passes a bolt C, having a head C^2 , an angulated portion C^3 , and a round portion C^4 , provided with a screw-thread C^5 , which extends to the free end of the bolt. The angulated portion C^3 fits into a correspondingly-shaped close-fitting angulated opening in the platform A^2 . The screw-threaded end of the bolt passes up and through the upper end of the cylinder B and is secured in position by means of a washer C^6 , resting on the top B^2 of the cylinder B, and a nut C^7 , engaging the free end of the bolt C^4 and screwed down upon the washer C^6 . The washer C^6 gives the cylinder B an opportunity to turn without moving the nut C^7 . On the round portion of the bolt is located a sleeve D, suitably connected to a spiral spring E, which winds around the sleeve. A preferred mode of uniting them together consists in forming in the sleeve D a notch or slot D^2 , substantially as shown, and the end E^2 of the spring being bent inward and backward in the form of an angulated hook is introduced into the slot and is thereby securely held in place. The other end of the spring is suitably secured to the cylinder B, preferably as shown—to wit, the outer end of the spring is provided with a hook E^3 , engaging hook F, having shoulder F^2 and end portion F^3 , which latter is close to the cylinder B.

A bolt or pin G extends through the vertical walls of the cylinder B and through the portion F^3 of hook F and is made to secure the latter firmly to the inner wall of the cylinder. The outer end of this pin is provided with a hook G^2 , arranged to receive the cord H, which is to be wound upon the cylinder B and form the connection between this spring device and the upper walls of the door-frame or other stationary piece to which it is to be attached. The spring G^2 affords a convenient means of attaching a looped end of the cord H. I find it desirable to provide my spring with means whereby its tension may be increased or diminished, according to the weight of the door to be closed or the dis-

tance the door is to travel, &c. To effectuate this object, I provide a disk K, located under the cylinder B and provided with a ratchet K², arranged to engage a suitable
 5 spring-pawl. One form J of such spring-pawl is shown, and consists of a piece of spring metal located on the platform A² and extending out substantially as shown between the platform and the teeth K² of the disk K and
 10 pressing upward against the ratchet. The free end of this spring extends out beyond the teeth K², affording an opportunity to depress the same by means of the thumb or finger. The preferred means of attaching the
 15 pawl in position so as to prevent its rotation is as follows: The pawl J has an opening J², which closely fits around the bolt C. The inner end of the pawl J is riveted at J³ to the platform A. The sleeve D, to which the inner
 20 end of the spring is attached, is fixed or integral with the disk K. In order to enable the disk K, sleeve D, and the coiled spring E to rotate readily above the platform A² and around the bolt C, a large washer or elevated
 25 piece can be placed between the spring-pawl J and the coiled spring E. Such an elevating-piece is more readily and economically provided by means of the raised or struck-up discal portion M, located on the platform A.
 30 This raised central portion M preferably extends over the pawl J and is cut away at its under side, so as to allow it to elsewhere rest upon the platform A² while the spring-pawl J fits into the parts cut away. This disk M has
 35 an angulated central opening which receives an angulated portion C³ of the bolt C and fits closely thereto.

The mode in which my device operates is substantially as follows: The frame at A⁴ being
 40 screwed or otherwise firmly secured to the door, one end of the cord H is connected to the hook G² and wound around the cylinder B a sufficient number of times to allow the door to move the required distance without in-
 45 juring the coiled spring E and without breaking the cord from the cylinder B or from an eye R, to which the other end of the cord is attached. When it is desired to cause the door to shut, this eye is fastened on the door-frame
 50 in a convenient position to enable the spring to act freely and the cord to wind the spring properly as the door is opened. The opening of the door unwinds the cord H from the band or drum B and winds the spring upon the sleeve
 55 C, and thereby increases its tension or power, and when the door is released and free to close the reaction of the spring will turn the band in the opposite direction and wind the cord upon the same, thereby causing the door to
 60 close. In case it is desired to cause the spring to open the door the spring-eye or equivalent connection is located on the wall or other suitable place, so as to strain the cord in an opposite direction from that in which it would
 65 be strained to shut the door. Then as the door is closed such action will operate to wind up the spring. When the door is free

to open, the spring will wind up the cord and open the door. Should the coiled spring E be too strong, the pawl J may be depressed
 70 and disengaged from the teeth K² and moved backward, so that the coils of the spring may be decreased; but if the tension of the spring is to be increased the pawl is moved forward, thereby winding up the spring after the man-
 75 ner of a clock-spring, the pawl J catching into each tooth as it passes it and engaging the same when allowed to do so.

Of the device which I have invented the platform A, cylinder, spring-pawl, rotatable
 80 discal plate F, its raised portion M, frame A, and hook F² can all be made out of flat material struck up by means of dies in a very economical and rapid way. My invention is therefore economical of manufacture. The
 85 parts can be readily and quickly assembled. The device is simple of construction and very effective in operation. It is also convenient of operation.

When desired, the mode of connecting the
 90 spring to the central sleeve D or its equivalent may be modified, a modification being the pin D³ with enlarged head (see Fig. 5) arranged to be received into a slot (not shown, but easily understood) in the inner end of the
 95 spring.

The mode of connecting the spring to the cylinder or casing B, modified, consists in omitting the hook F and utilizing the inner
 100 end of the pin G by giving it extension and an enlarged head G³, adapted to be received into a slot (not shown, but understood) in the outer end of the spring.

What I claim as new and of my invention, and desire to secure by Letters Patent, is—
 105

1. In a door-spring, the combination of the supporting-frame, spring-pawl, cylinder B, an intervening rotatable disk K, provided
 110 with a ratchet for engaging the spring-pawl, bolt C extending through the cylinder B and fixed in the frame A so as to be non-rotatable in the latter, coiled spring E at the inner end fixed to a central portion of the device, connected to the rotatable disk K so as to rotate therewith in setting the tension of the
 115 spring, and having its outer end fixed to the inner side of the cylinder, and a cord H adapted to be attached to the outer side thereof and to a door, whereby the cord may be wound thereon as the door is closed by the
 120 reaction of the spring, substantially as and for the purposes specified.

2. In a door-spring, the combination of the supporting-frame, cylinder B, spring-pawl J fixed to the frame, an intervening rotatable
 125 disk K, carrying a ratchet for engaging this pawl, bolt C extending through the cylinder B and fixed in the frame A so as to be non-rotatable in the latter, collar or sleeve D rotatable on the bolt and fixed to the disk K
 130 and having slot D², and coiled spring E having the bent or hooked end E² inserted in the slot D², having its other end connected to the interior of the hollow cylinder B, a cord, and

means connected to the cylinder for attaching the cord to the cylinder and having it wound thereon, substantially as and for the purposes specified.

5 3. In a door-spring, the combination of the supporting-frame, cylinder B, spring-pawl, an intervening rotatable disk K, provided with a ratchet, to connect with the spring-pawl, bolt C extending through the cylinder B and
10 fixed in the frame A so as to be non-rotatable in the latter, collar or sleeve D rotatable on the bolt, and connected to disk K and having slot D³, and coiled spring E, having its outer end provided with a hook E³, and a
15 hook F for engaging the hook E³ of the coiled spring, the hook F being connected to the interior of the cylinder B, and means for operatively connecting the rotary cylinder B with a door, substantially as and for the purposes
20 specified.

4. In a door-spring device, containing a supporting-frame, a cord, a hollow cylinder on said frame, a coiled spring within the cylinder connected at its inner end to a rotary central portion of the device, and having its free
25 end provided with a hook, also a hook F for engaging the exterior hook of the spring, and

a pin G extending through the cylinder, and at its inner end holding the hooked end in place, and at its outer end provided with a
30 hook G² for the attachment of the cord whereby the spring device may be operated, substantially as and for the purposes specified.

5. In combination with a supporting-platform, a cord, cylinder B, rotatable disk K between the disk and the platform and having
35 a ratchet on its edge nearest the platform, all of these portions being concentric, a coiled spring located in the cylinder and attached to the central portion of the mechanism connected to disk K, and its outer free
40 end connected to the rotatable cylinder B, the platform being provided with a raised central portion M having a depression M², a spring-pawl J received in the discal portion or
45 recess M² of disk M, and engaging the ratchet of the disk K, and a central bolt connecting the parts together, substantially as and for the purposes specified.

DANIEL W. BROMLEY.

Attest:

WM. SALMON JOHNS,
K. SMITH.