No. 734,448. PATENTED JULY 21, 1903.

H. J. VALENTINE.

SPRING DOOR CLOSER.

APPLICATION FILED NOV. 18, 1902.

NO MODEL.

Fig. 1

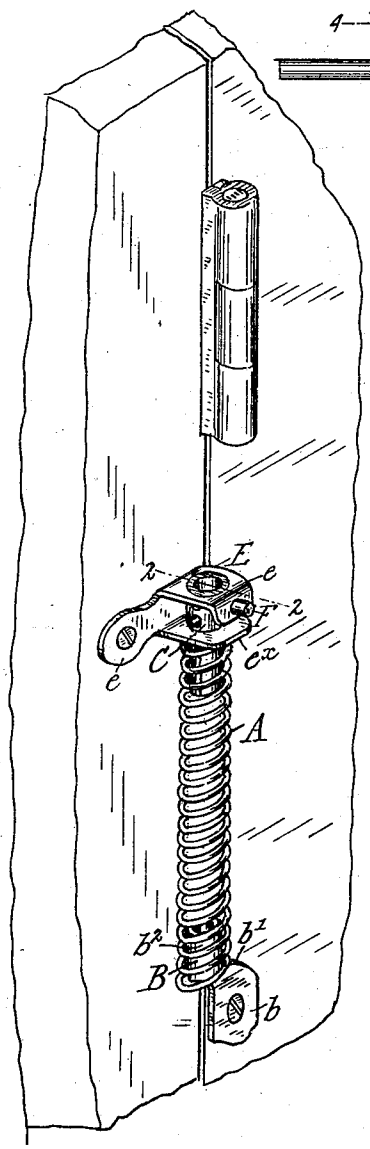


Fig. 2

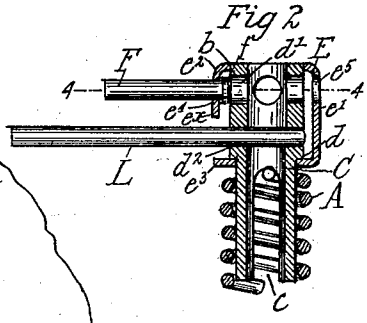


Fig. 3

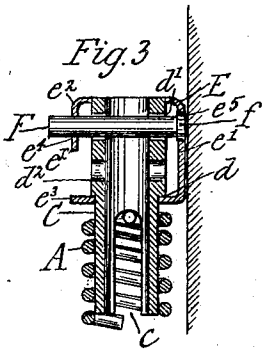


Fig. 4

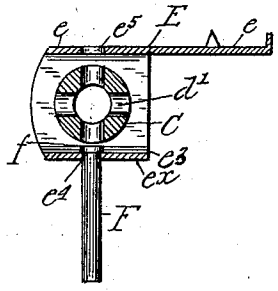


Fig. 5

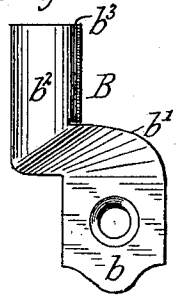
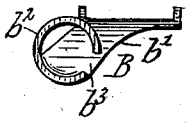


Fig. 6



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 734,448. Patented July 21, 1903.

UNITED STATES PATENT OFFICE.

HARRY J. VALENTINE, OF CLEVELAND, OHIO, ASSIGNOR TO THE COLUMBIAN HARDWARE COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

SPRING DOOR-CLOSER.

SPECIFICATION forming part of Letters Patent No. 734,448, dated July 21, 1903.

Application filed November 18, 1902. Serial No. 131,824. (No model.)

To all whom it may concern:

Be it known that I, HARRY J. VALENTINE, a citizen of the United States of America, and a resident of Cleveland, Cuyahoga county, in the State of Ohio, have invented certain new and useful Improvements in Spring Door-Closers, of which the following is a specification.

My invention relates to spring door-closers; and the object of the invention is to provide a simple, effective, and durable device for closing doors automatically, the special objects of the invention being to provide a more reliable door-closer than those heretofore in use, to make the parts thereof, with the exception of the spring, cheaper than heretofore, and to provide a door-closer of the class shown in which all parts are combined, so as not to be lost or easily detached.

To these ends my invention consists of certain features of construction and combinations of parts to be hereinafter described and then claimed.

In the accompanying drawings, Figure 1 is a perspective view of a portion of a hinged door and its frame, showing my improved closer applied thereto. Fig. 2 is a section on the line 2 2, Fig. 1, of the upper parts of the door-closer around the straining-post, the straining-post being shown free to turn and a turning-lever being applied to the post. Fig. 3 is a similar section, the spring having been strained and the straining-post locked by the locking-pin. Fig. 4 is a transverse section on the line 4 4, Fig. 2; and Figs. 5 and 6 are respectively a side elevation and a plan of the foot-piece.

Some of the door-closers in use are set parallel with the door-jamb and some are arranged at a slant, and while my invention is not necessarily limited to the one or the other class it is shown as applied to the former class.

The spring A is of helical form, and at its lower end it is anchored or held fast, while it is strained, preferably, from its upper end, the spring being of suitable length so that various degrees of tension may be imparted thereto.

The foot-piece will first be described. This consists of a suitably-bent strip B, of sheet metal, formed with a foot b, from which extends forwardly and laterally a neck b', from which extends upwardly in front of and to one side of the foot b a cylindrical post b^2, which is formed by bending the piece B, of sheet metal, around, as shown. There is a slot b^3 left at one side of this hollow post. The lower end of the spring A is inserted in this slot b^3 by pushing the post b^2 into the lower coils of the spring, so that that end of the spring cannot turn relatively to the foot-piece.

Now as to the head-piece and allied parts. At the upper end of the spring is located a straining-post C, which is provided with a diametrical slot c in its lower end to receive the upper end of the spring A, so that by turning the post the spring can be placed under tension. The upper end of the post C is slightly enlarged to form a shoulder d, which retains in position a head-piece E, which is inserted over the lower smaller end of the post before the spring is put on. This head-piece E is bent up out of sheet metal, it being formed at one side with an ear e, extending from its back e', and with upper and lower perforated lugs e^2 e^3, formed as bearings, in which the upper end of the straining-post swivels. The upper lug e^2 is provided at the front with a downwardly-extending lip $e^\times$, which receives the locking-pin F, guided through a perforation e^4 in said lip, and provided at its rear end with a head f, which prevents the loss of the pin or its removal from the head-piece. An annular series of holes d' is formed in the upper end of the straining-post, the diameter of these holes being greater than the diameter of the hole in the lip $e^\times$, or rather these holes are large enough to permit the headed end of the pin F to be pushed completely through the straining-post until the head enters a perforation e^5 in the back e' of the head-piece. This locks the straining-post against turning relatively to the head-piece. The annular series of holes d' and the perforations e^4 e^5 in the fixed head lie substantially in the same transverse plane. Below the annular series of holes d' the straining-post is provided with an annular series of holes d^2, which are adapted to receive a suitable straining-lever L, such as a nail, for the purpose of rotating the

straining-post in the head-piece and straining the spring when the straining-post is not locked to the head-piece by the locking-pin. The lip $e^{\times}$ terminates above the series of holes d^2 and permits the turning of the lever.

To apply the door-closer to a door, the foot-piece B is screwed to the door-frame, while the head-piece E is screwed to the door; but it is evident that if the spring action were reverse to that of the spring shown the foot-piece would be attached to the door and the head-piece to the door-frame. To strain the spring A, the locking-pin F is moved out into the position shown in Fig. 2, thus releasing the straining-post. A suitable lever L is now inserted in one of the holes d^2 of the straining-post and the latter turned by means of the lever, the locking-pin being then pushed in until its headed end enters the rear perforation e^5 of the head-piece. The spring is thus under tension, and the straining-post cannot rotate relatively to the head-piece. It is evident that the spring can be strained a number of times by proper manipulation of the locking-pin and the turning lever.

As the foot-piece and the head-piece are both made of sheet metal, these parts can be readily bent into shape, and as they are light as compared with cast metal and less liable to breakage a superior spring door-closer is produced. The parts are readily assembled to complete the device, and after they have once been assembled they will not become lost from each other. If the door-closer were reversed, so that the foot-piece is at the top and the head-piece at the bottom, the action would be the same.

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

1. In a spring door-closer, the combination of a spring, a foot-piece engaged with one end of the spring, a straining-post engaged with the other end of the spring, a head-piece bent out of sheet metal and provided with top and bottom lugs in which the straining-post swivels, means for locking the straining-post in adjusted position to the head-piece, and means for turning the straining-post, substantially as set forth.

2. In a spring door-closer, the combination of a spring, a foot-piece engaged with one end of the same, a straining-post engaged with the other end, said straining-post being provided with a series of holes for a locking-pin, a head-piece in which the straining-post swivels, said head-piece being provided with perforations in the transverse plane of and registering with the holes of the straining-post, a locking-pin guided in the said holes and perforations of the straining-post and head-piece, and means for turning the straining-post, substantially as set forth.

3. In a spring door-closer, the combination of a spring, a foot-piece engaged with one end thereof, a straining-post engaged with the other end of the spring and provided with an annular series of holes, a head-piece in which the straining-post swivels, said head-piece being provided at front and rear with perforations, the front perforation being smaller than the rear perforation and the said holes of the straining-post, a locking-pin having a head at its rear end and guided in the said perforations and holes, and means for turning the straining-post, substantially as set forth.

4. In a spring door-closer, the combination of a spring, a foot-piece engaged with one end thereof, a straining-post engaged with the other end thereof, said straining-post having an upper and a lower annular series of holes, a head-piece in which the straining-post swivels, said head-piece having perforations registering with the upper series of holes of the straining-post, a locking-pin guided in said perforations and upper holes, and a turning-lever applied to the lower series of holes, substantially as set forth.

5. In a door-closer, the combination of a spring, a foot-piece engaged with one end of the spring, a straining-post engaged with the other end, a head-piece provided with a pair of perforated lugs in which the straining-post swivels, said straining-post having a shoulder abutting upon the lower lug, means to permit the turning of the straining-post, and means for locking the straining-post to the upper lug of the head-piece, substantially as set forth.

6. The herein-described head-piece for the straining-post of the spring of a spring door-closer, the said head-piece consisting of a back portion, to one side of which extends an attaching-ear, and a pair of lugs formed with bearings for the straining-post, substantailly as set forth.

7. The herein-described foot-piece for the spring of a spring door-closer, the said foot-piece consisting of a foot, a forwardly and laterally extending neck, and a hollow cylindrical post, all formed of sheet metal in one piece, the said foot-piece having, at one side of its post, a slot to receive one end of the spring, substantially as set forth.

Signed at New York, N. Y., this 1st day of November, 1902.

HARRY J. VALENTINE.

Witnesses:
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GEO. L. WHEELOCK.