

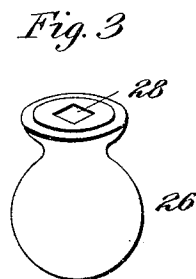
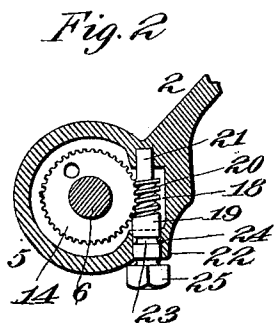
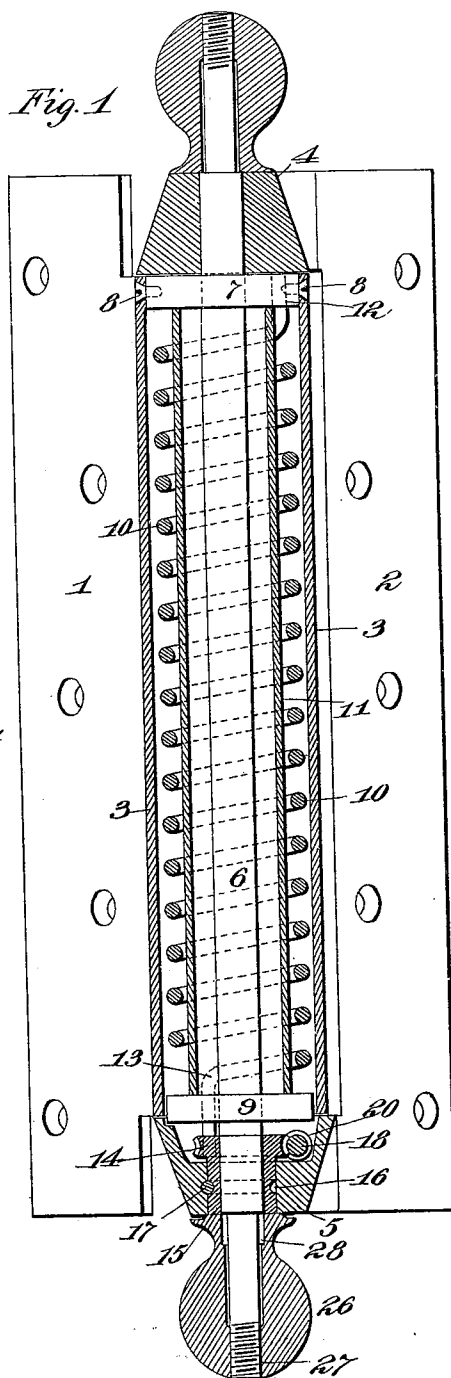
No. 631,462.

Patented Aug. 22, 1899.

C. F. HANINGTON.
SPRING HINGE.

(Application filed July 28, 1898.)

(No Model.)



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES F. HANINGTON, OF NEW YORK, N. Y., ASSIGNOR TO JOSEPH HUGHES, OF SAME PLACE.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 631,462, dated August 22, 1899.

Application filed July 28, 1898. Serial No. 687,099. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. HANINGTON, a citizen of the United States, residing in the borough of Manhattan, city of New York, State of New York, have invented certain new and useful Improvements in Spring-Hinges, of which the following is a specification.

My invention relates to various new and useful improvements in spring-hinges; and the invention particularly relates to improved means used in connection with such hinges by which a very delicate adjustment of the operating spring or springs may be obtained. In the ordinary form of spring-hinge the mechanism for regulating the tension of the springs is not adapted for nor capable of precise operation, and in consequence, owing to the long leverage of the door, it is very difficult to place the operating-springs under the required exact tension. By means of my present invention I provide means for adjusting the operating-springs, which means will be preferably concealed entirely within the hinge and by which extremely-delicate adjustment may be secured.

In order that my invention may be better understood, attention is directed to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a vertical sectional view of the spring-hinge, illustrating the preferred embodiment of my invention; Fig. 2, a section through the adjusting device, and Fig. 3 a perspective view of the winding-knob which normally constitutes one of the ornaments for the pintle.

In all of the above views corresponding parts are represented by the same numerals of reference.

1 and 2 represent the leaves of a hinge of any suitable construction. The leaf 1 is cast integral with the barrel 3, and the leaf 2 is provided at the top and bottom with shoulders 4 and 5, through which the pintle 6 extends. The barrel 3 is provided at its upper end with a collar 7, secured thereto, such as by screws 8, and bearing upon the pintle, and said barrel may at its lower end be provided with a loose collar 9, whereby the barrel 3 will be properly centered upon the pintle. Mounted within the barrel is the operating-spring 10, of any suit-

able type. Preferably this operating-spring is maintained out of engagement with the pintle by means of a sleeve 11, interposed between said spring and pintle. The sleeve 11 may be formed integral with either of the collars 7 or 9, or, if desired, it may be independent of either of said collars. The upper end of the spring 10 passes through an opening 12 in the collar 7, and the lower end 13 of said spring passes through an opening in the loose collar 9. The extreme lower end of said spring enters an opening in a worm-wheel 14, formed integrally with a sleeve 15, which works within the shoulder 5 of the leaf 2 and immediately surrounds the pintle. Said sleeve 15 of the worm forms the lower bearing of the leaf, as will be seen. Said sleeve is provided with a groove 16 therein, with which a pin 17 engages, so as to prevent lateral movement of said sleeve. The worm-wheel 14 is adapted to be rotated so as to adjust the tension of the spring 10 by means of a worm 18 of any suitable type. I illustrate the said worm as being provided with a main bearing portion 19, a threaded portion 20, the external diameters of said threads being not greater than the bearing portion 19, and a contracted bearing portion 21, working in an opening in the wall of the shoulder 5. The bearing portion 19 is carried within a boss or projection 22 in said shoulder, as shown. The bearing portion 19 is provided with a groove 23 therein, with which a pin 24 coöperates, so as to prevent longitudinal movement of the worm. This worm is in engagement with the worm-gear 14, as shown in Fig. 2. The outer end of the worm is provided with a rectangular turning portion 25, with which coöperates a key for rotating the worm for the purpose of adjusting the tension of the spring. Any suitable key for this purpose may be employed. I prefer, however, to utilize one of the ornamental knobs 26 on the pintle for this purpose. To this end the said knob is provided with a screw-threaded portion 27, so as to enable it to be readily removed, and with a rectangular recess 28, which may be engaged with the rectangular portion 25 of the worm for the purpose of rotating the same.

The operation of my improved device will be obvious, since it will be seen that by removing the knob 26 and engaging it with the

portion 25 the worm 18 may be rotated to turn the worm-gear 14, whereby the lower end of the spring 10 will be moved relatively to its upper end and the tension of said spring 5 in this way adjusted. The worm will remain in any position in which it may be left, whereby I am able to dispense with all forms of special locking devices for retaining the tension of the operating-spring. Owing to the 10 great delicacy of movement of the worm mechanism, as I have explained, it will be possible to adjust the tension of the operating-spring with the greatest accuracy. It will of course be evident that since one end of the 15 operating-spring is connected to one leaf of the hinge and the lower end of said spring, through the worm-gear and worm, is connected to the other leaf of said hinge, the elasticity of the spring will tend to operate said hinge 20 in the desired way for the closing of the door.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows:

1. An improved spring-hinge comprising 25 the two leaves, a barrel carried by one of said leaves, a spring within said barrel with one of its ends connected to the barrel, a worm-gear provided with a sleeve which constitutes one of the bearings for the other leaf, and with 30 which worm-gear the other end of the spring is connected, and a worm for operating said gear, substantially as set forth.

2. In a spring-hinge, the combination with the two leaves mounted pivotally with respect 35 to the pintle, one of said leaves carrying the hinge-barrel, an operating-spring within said barrel having one of its ends connected to said barrel, a worm-gear rotatably mounted on the knuckle of the other leaf, and a worm in en- 40 gagement with said worm-gear and carried by said other leaf, substantially as set forth.

3. In a spring-hinge, the combination with the two leaves mounted pivotally with respect 45 to the pintle, one of said leaves carrying the hinge-barrel, an operating-spring within said barrel having one of its ends connected to said barrel, a worm-gear rotatably mounted on the knuckle of the other leaf, a worm in engagement with said worm-gear and carried by said 50 other leaf, and a sleeve interposed between said operating-spring and pintle, substantially as set forth.

4. In an improved spring-hinge, the combination of the two leaves, one of which carries a barrel, the pintle, with respect to which 55 the leaves are pivotally mounted, a fixed col-

lar carried by the hinge-barrel at its upper end and mounted on the pintle, a loose collar carried on the pintle near the lower end of said barrel, an operating-spring within the 60 barrel interposed between said collars, one end of said spring being attached to the stationary collar and the other end passing through the movable collar, a worm-wheel mounted on the pintle beneath the movable 65 collar, and a worm carried by the other hinge-leaf and engaging said worm-wheel, substantially as set forth.

5. In an improved spring-hinge, the combination of the two leaves one of which carries a barrel, the pintle with respect to which 70 the leaves are pivotally mounted, a fixed collar carried by the hinge-barrel at its upper end and mounted on the pintle, a loose collar carried on the pintle near the lower end of 75 said barrel, an operating-spring within the barrel interposed between said collars, one end of said spring being attached to the stationary collar, and the other end passing through the movable collar, a worm-wheel 80 mounted on the pintle beneath the movable collar, a worm carried by the other hinge-leaf and engaging said worm-wheel, and a winding-knob for operating said worm normally carried by the pintle but removable there- 85 from, substantially as set forth.

6. In an improved spring-hinge, the combination of the two leaves one of which carries a barrel, the pintle with respect to which 90 the leaves are pivotally mounted, a fixed collar carried by the hinge-barrel at its upper end and mounted on the pintle, a loose collar carried on the pintle near the lower end of 95 said barrel, an operating-spring within the barrel interposed between said collars, one end of said spring being attached to the stationary collar and the other end passing through the movable collar, a worm-wheel 100 mounted on the pintle beneath the movable collar, a worm carried by the other hinge-leaf and engaging said worm-wheel, a winding-knob for operating said worm normally carried by the pintle but removable therefrom, and means for preventing longitudinal move- 105 ment of said worm, substantially as set forth.

This specification signed and witnessed this 5th day of July, 1898.

CHARLES F. HANINGTON.

Witnesses:

JNO. R. TAYLOR,
ARCHIE G. REESE.