

A. DANIELSON.
 SPRING HINGE.
 APPLICATION FILED MAR. 3, 1909.

937,053.

Patented Oct. 19, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

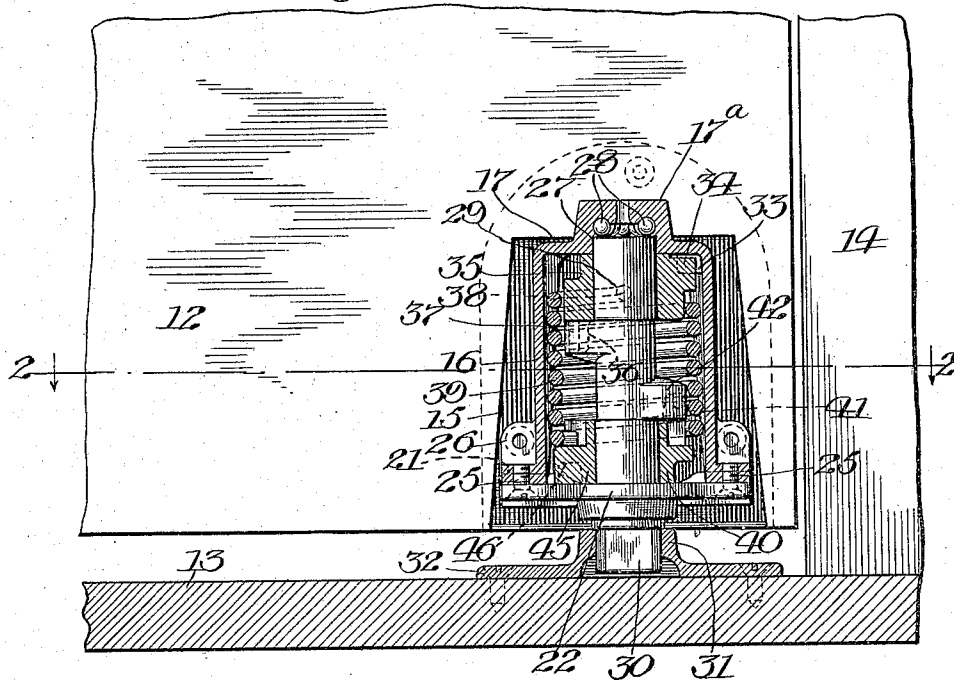
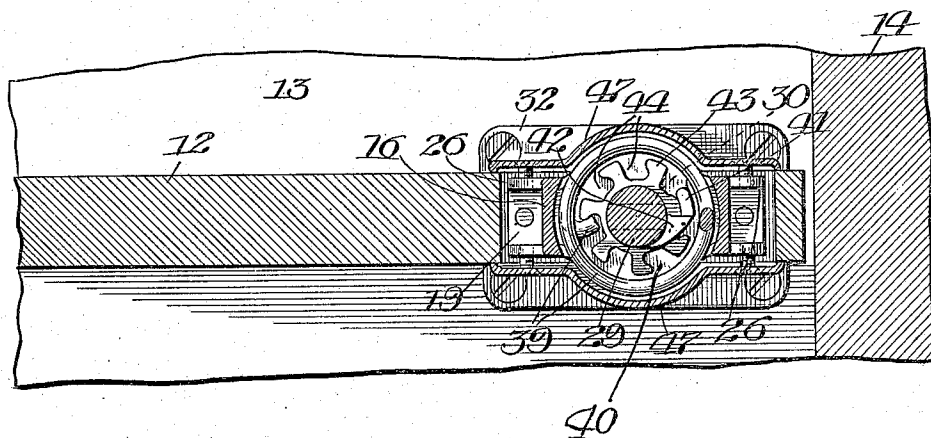


Fig. 2.



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 2 SHEETS—SHEET 2.

Fig. 3.

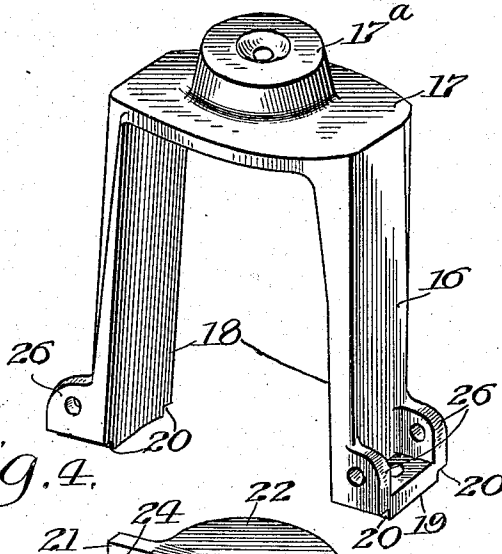


Fig. 6.

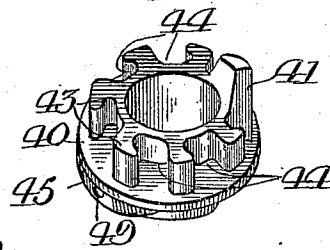


Fig. 4.

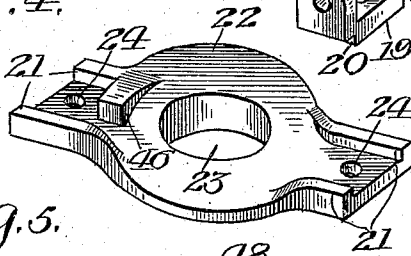


Fig. 5.

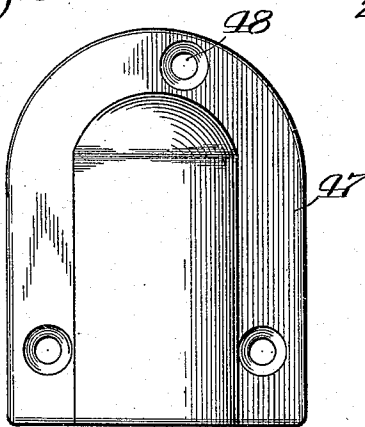


Fig. 7.

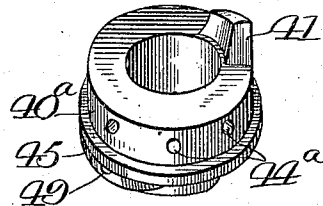
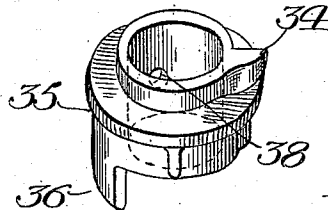


Fig. 8.



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ALBIN DANIELSON, OF CHICAGO, ILLINOIS.

SPRING-HINGE.

937,053.

Specification of Letters Patent.

Patented Oct. 19, 1909.

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To all whom it may concern:

Be it known that I, ALBIN DANIELSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Spring-Hinges, of which the following is a specification.

This invention relates to improvements in that class of hinges which are used on doors and known as double acting spring-hinges operating to automatically close the door by causing it to swing into normal position when opened in either direction; and it consists in certain peculiarities of the construction, and the novel combination, arrangement, and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

The principal object of the invention is to provide a spring-hinge of the above-named character, which shall be simple and inexpensive in construction, strong, durable and effective in operation, and so made that it may be mainly mounted on the door and carried thereby instead of on the door-sill as has heretofore been the custom.

Another object of the invention is to provide means whereby the tension of the spring which actuates the door may be easily regulated as desired.

Other objects and advantages of the invention will be disclosed in the subjoined description and explanation.

In order to enable others skilled in the art to which my invention pertains, to make and use the same, I will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 is a view partly in elevation and partly in section of a part of a swinging door and a portion of the door-frame, showing a spring-hinge embodying the invention mounted thereon with the parts in position ready for use; Fig. 2 is a horizontal sectional view taken on line 2—2 of Fig. 1 looking in the direction indicated by the arrows; Fig. 3 is a detached perspective view of the hinge-frame; Fig. 4 is a similar view of the removable base of said frame; Fig. 5 is a face view of one of the side plates of the hinge; Fig. 6 is a detached perspective view of the tension regulating collar; Fig. 7 is a similar view of a modified form of the tension regulating collar; and Fig. 8 is a detached perspective view of the upper collar of the hinge.

Like numerals of reference, refer to cor-

responding parts throughout the different views of the drawings.

The reference numeral 12 designates a swinging door which is provided at its upper portion with a suitable pivot (not shown) so as to allow it to swing back and forth over the door-sill 13 of the door-frame 14, which may be of the ordinary or any preferred construction. The door 12 is provided in its lower portion near one of the sides of the door-frame 14 with a vertical opening or recess 15 to receive the hinge-frame 16, which is preferably of the shape shown in Figs. 1 and 3 of the drawings, that is to say, yoke-shaped or formed with a horizontally disposed upper part 17 which is provided with downwardly disposed members 18 each of which has at its lower end an outwardly extended and apertured portion 19 provided at each of its side edges with a recess 20 to receive or engage ribs 21 which are formed on the upper surface at each end of the base 22 for the frame 16, which base is provided with a central opening 23 for the reception and operation of the spindle of the hinge and with openings 24 for the reception of screws 25 used for securing the base 22 to the extensions 19 of the hinge-frame in the apertures of which extensions said screws will fit or engage. At its lower portion each of the members 18 is formed at each of its sides with an outwardly and upwardly extended apertured lug 26 which lugs are united to the extensions 19 as shown, and form the upper surfaces of the recesses 20 therein. The horizontal portion 17 of the hinge-frame 16 is formed with an upward and apertured extension 17^a which has a cavity 27 for the reception of anti-friction balls 28 and the upper portion of the spindle 29 which has its lower end flattened in cross-section as at 30, or formed otherwise than cylindrical, to fit in a correspondingly-shaped socket 31 in a plate 32 secured to the upper surface of the door-sill 13 near one side of the door-frame, and usually directly under the pivot at the top of the door. The horizontal portion 17 is also provided on its lower surface at one of the members 18 with a lug 33 to engage a lug 34 on the upper portion of the upper collar 35 which is mounted on the upper portion of the spindle 29 and has on its lower portion an extension 36 to engage a lateral projection 37 on the spindle 29, as will be clearly understood by reference to Fig. 1 of

the drawings. The collar 35 is provided with an opening 38 to receive one end of the spring 39 which encircles the spindle 29, and has its lower end in engagement with
 5 a tension regulating collar 40 located around the lower portion of the spindle 29 and resting on the base 22 of the hinge-frame. This collar 40 has on its upper portion a projection 41 to engage a lateral extension 42 on
 10 the spindle 29, which extension is projected oppositely from the extension or projection 37 on said spindle. The collar 40 also has on its upper portion a series of outwardly extended arms 43, thus providing recesses 44
 15 for the reception of the lower end of the spring 39, which end is preferably downturned to fit in one of said recesses at a time. The lower part of the collar 40 is provided with a downwardly extending lug 45
 20 to engage an upwardly extending lug 46 on the upper surface of the base 22 of the hinge-frame, as will be readily understood by reference to Figs. 1 and 4 of the drawings. Located on each side of the door 12
 25 and over the opening 15 therein is a plate 47, each of which is secured at its lower portion by means of screws to the apertured lugs or extensions 26 of the hinge-frame and at its upper end above the opening to the door
 30 by means of screws which are extended through a suitable opening 48 in each of the plates, which openings are preferably formed so as to be out of alinement with one another, or to one side of a central vertical line through said plates, thus permit-
 35 ting longer screws to be employed.

By reference to Figs. 2 and 5 of the drawings it will be seen that the plates 47, which, together with the frame 16 form a casing for
 40 the parts of the hinge, are outwardly curved, thus affording means for the employment of a larger and stronger spring 39 than could be used if said plates were straight in cross-section.

45 Instead of using the tension regulating collar 40 for the spring constructed as shown in Figs. 1, 2 and 6 of the drawings and above-described, I may employ a tension regulating collar 40^a of the construction
 50 illustrated in Fig. 7, in which the outwardly extending arms 43 and recesses 44 therebetween are dispensed with, and a series of radial openings 44^a formed in the periphery of the collar are employed to receive the
 55 lower end of the spring 39 which, when this modified form of the collar is employed, should have its lower end inwardly bent so as to engage one of the openings 44^a. As will be observed by reference to Figs. 6 and
 60 7 the collar 40 or collar 40^a may be turned so as to regulate the tension of the spring by means of a rod or other instrument inserted in an opening 49 formed in the lower portion of said collars. When the modified
 65 form of collar shown in Fig. 7 is employed

it will be understood that the lug 46 on the bottom 22 of the hinge-frame will engage the lug 45 on the lower portion of the collar in the same manner as when the collar 40 shown in Figs. 1 and 6 of the drawings is 70 employed.

From the foregoing and by reference to the drawings it will be understood and clearly seen that the spindle 29 will be held
 75 against rotation by means of its engagement at its lower end with the socketed plate 32, and that when the door is turned in one direction the lug 34 on the upper collar 35 will engage the lug 33 on the horizontal portion 17 of the frame 16 and that the lug 36 on the
 80 lower portion of the upper collar will recede from the lateral projection 37 on the spindle. In this operation the lower collar will be held rigidly on the spindle by reason of the tension of the spring causing the lug 85 41 to engage the lower projection 42 on the spindle. When the door is moved in the opposite direction from that just above-described the lug 46 on the base 22 of the frame will engage the lug 45 on the lower 90 portion of the lower collar, while the lug 41 of said collar will recede from the lower projection 42 on the spindle. In this latter operation it will be understood that the upper collar is rigidly held on the spindle. 95 To regulate the tension of the spring a rod or other instrument may be inserted in the opening 49 in the tension regulating collar, which may be turned to the proper position so that the lower end of the spring may en- 100 gage the proper recess 44 or opening 44^a when the modified form shown in Fig. 7 is employed to give the proper tension to the spring.

Having thus fully described my invention, 105 what I claim as new, and desire to secure by Letters-Patent, is—

1. The combination with a spindle mounted vertically and against rotation and having oppositely extended upper and lower 110 projections, of a frame consisting of a horizontally disposed part having on its lower surface an inwardly extended lug and at its ends downwardly extending members each having at its lower end an outwardly ex- 115 tended portion provided at each of its side edges with a recess, a base for said frame having ribs at the side edges of each of its ends to engage said recesses and provided with a lug on its upper surface, means to secure the base to the lower surfaces of the extensions on the downwardly extended members of the frame, a coil-spring located in the frame around the spindle, a collar 120 mounted on the upper portion of the spindle in engagement with the upper end of the spring and having on its upper portion a lug adapted to engage the lug on the frame and provided on its lower portion with a downward extension adapted to engage the 130

upper projection on the spindle, and a tension regulating collar having means to engage the lower end of the spring and mounted on the lower portion of the spindle above
5 the frame-base and provided in its upper portion with an upward extension adapted to engage the lower projection on the spindle and on its lower surface with an extension adapted to engage the lug on the base of the
10 frame.

2. The combination with a spindle mounted vertically and against rotation, of a spring-actuated yoke-like frame having in its upper and lower portions bearings for
15 the spindle and adapted to be located in a vertical opening in a door, said frame consisting of a horizontally disposed part hav-

ing at its ends downwardly extending members, each having at its lower end an outwardly extended portion provided at each of
20 its side edges with a recess and also with an upwardly extended apertured lug, a base for said frame having ribs at the side edges of each of its ends to engage said recesses, and a side-plate outwardly curved in cross-
25 section located on each side of the door over the opening therein, and secured at its lower portion to the lugs on the frame and at its upper part to the door.

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