

No. 664,682.

Patented Dec. 25, 1900.

W. K. SANDSTROM.
SPRING HINGE.

(Application filed July 20, 1900.)

(No Model.)

2 Sheets—Sheet 1.

FIG. 1.

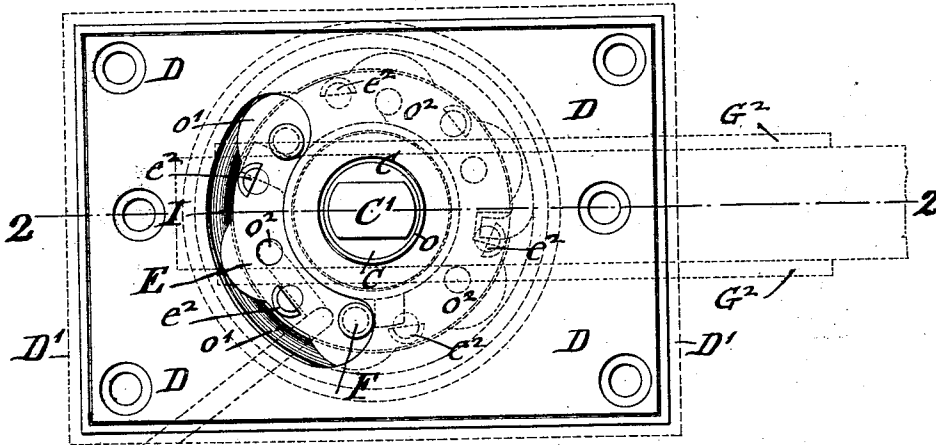
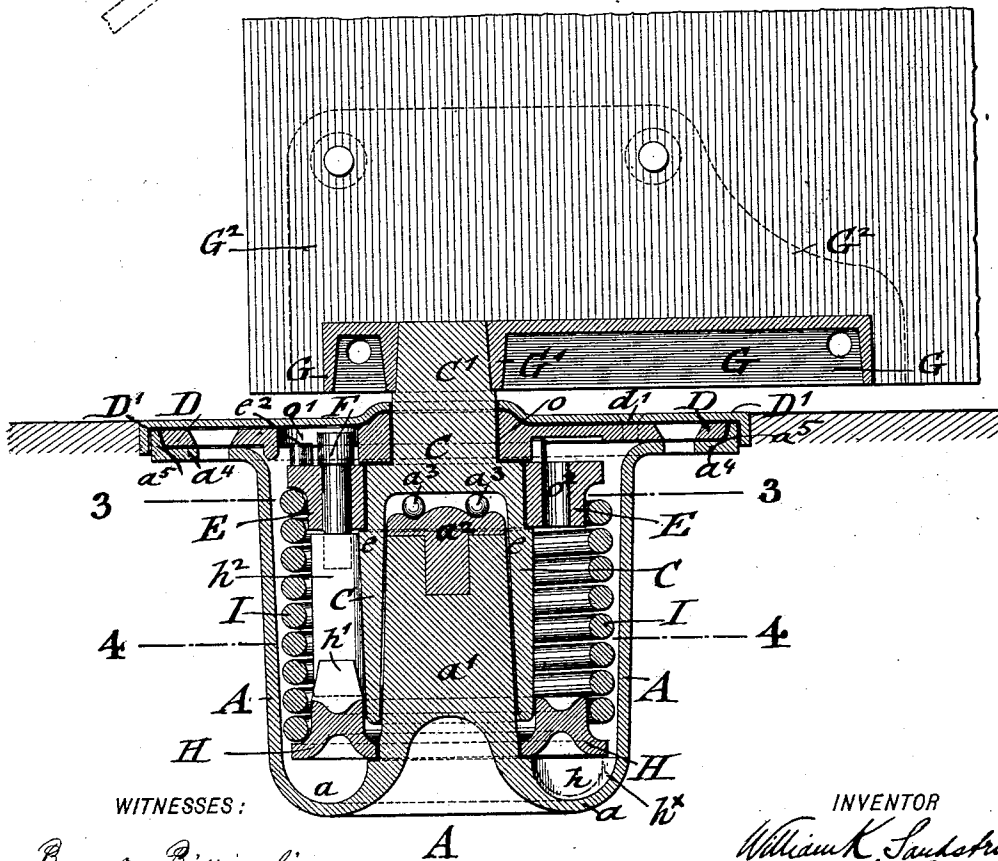


FIG. 2.



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FIG. 3.

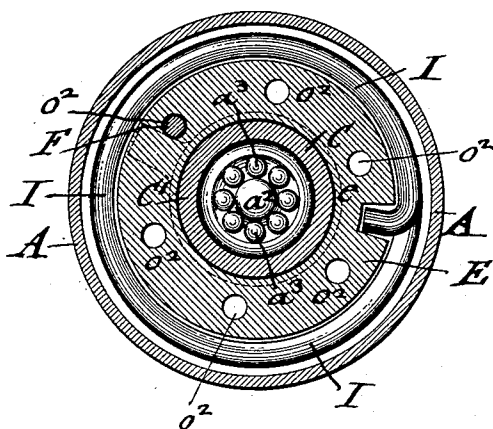


FIG. 4.

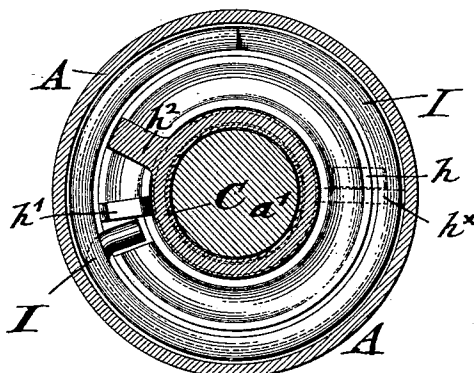
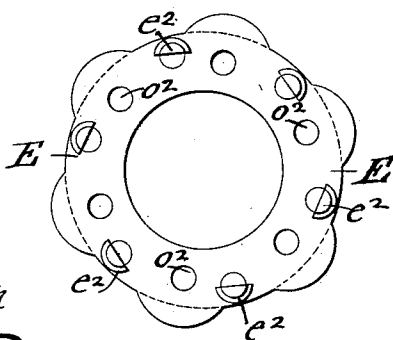


FIG. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM K. SANDSTROM, OF NEW YORK, N. Y., ASSIGNOR TO BOMMER BROTHERS, OF SAME PLACE.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 664,682, dated December 25, 1900.

Application filed July 20, 1900. Serial No. 24,270. (No model.)

To all whom it may concern:

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

This invention relates to certain improvements in door-hinges of that class known as "double-acting spring-hinges" and which are intended to close the door automatically after the same is opened in one or the opposite direction; and the invention consists more specifically in spring-hinges of the class in which the door is supported on the spring-hinge, which is set into the sill of the door, the upper part of the door being supported by a pintle in the top part of the door-frame; and the invention consists in a double-acting spring-hinge having certain characteristics of construction, more fully described hereinafter and finally claimed.

In the accompanying drawings, Figure 1 represents a plan view of my improved spring-hinge; Fig. 2, a vertical central section of the same and a portion of the door on line 2 2, Fig. 1. Figs. 3 and 4 are horizontal sections, respectively, on lines 3 3 and 4 4, Fig. 2; and Fig. 5 is a plan view of the upper tension-regulating collar.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the casing of my improved spring-hinge, which is preferably cylindrical in shape and let into the floor, as shown in Fig. 1. The lower portion of the casing A is provided with an annular bottom groove *a* and a center post *a'*, which is cast integral with the casing A, said post being provided at its upper part for supporting the door-spindle with a grooved steel facing *a²*, between which and the door-supporting spindle C are interposed the antifriction-balls *a³*. The center post is made slightly tapering from its lower end upward and surrounded by the hollow socket-shaped end of the spindle C. The upper end of the casing A is provided with an outwardly-bent flange *a⁴*, having a circumferential rim *a⁵*, on which

is supported a cast top plate D, that is attached by suitable screws to the circumferential flange of the casing A. The top plate D is provided with a central opening *o*, through which the upper end of the spindle extends, also with a segmental opening *o'*, concentric with the central opening *o*, which serves for giving access through the top plate to the tension-regulating collar E, which is free to rotate on a shoulder *e* on the upper part of spindle C, said collar being provided with round holes *o²* equidistantly from each other and immediately thereof with cast projections *e²*, which form seats for a tension-regulating key K. The holes *o²* serve for receiving a headed stop-pin F, which is dropped into the same when the spring is set to proper tension, and also for receiving the end of the key K, which abuts against one of the projections *e²* in turning the collar E. The upper end of the spindle C is made of circular shape so far as it passes through the upper collar E and the central opening *o* in the cover and with a rectangular portion C', that fits into a socket G' of corresponding shape in the swivel-bar G, the door being provided at its upper part with a suitable pivot, (not shown,) so as to allow it to swing back and forth. The swivel-bar G is inserted in a suitable mortise in the lower portion of the door and is firmly secured thereto by means of plates G², that are fastened to the sides of the door and secured thereto, as well as to the swivel-bar G, by suitable fastening-screws.

At the bottom of the casing A is arranged a second or lower tension-regulating collar H, which is provided at one point of its circumference with a downwardly-projecting lug *h*, that abuts against a suitable stop *h^x* in the circumferential bottom groove of the casing A. The collar is further provided with an upwardly-extending lug *h'* at a point diametrically opposite to the lug *h*, which abuts against a flange *h²*, that extends from the lower socket-shaped portion of the spindle C, as shown in Fig. 2. A helical spring I, of steel wire, is supported by the tension-regulating collars E and H, the ends of said spring I being bent and connected with said collars, re-

spectively, the collars being provided with exterior seats for the coil-spring I. After the tension of the coil-spring I has been properly regulated by the key K, inserted into one of the holes o^2 and engaged with a projection e^2 , as shown in dotted lines in Fig. 1, the locking-pin F is dropped into the hole o^2 next adjacent to the flange on the socket-shaped portion of the spindle, so as to lock the upper tension-collar in position against the end wall of the segmental opening o' in the top plate of the casing, the turning of the lower collar being prevented by the abutting of its lugs with the bottom of the casing and flange on the socket-shaped portion of the spindle, respectively. When all the parts have been thus assembled and the actuating-spring I set to proper tension, a flanged dust-cover D', stamped up of wrought metal, is placed on the top plate of the casing and secured to the latter by a connecting-screw d' , as shown in Fig. 2.

The operation of my improved spring-hinge is as follows: The rectangular portion of the spindle is inserted into the swivel-bar of the door, and then by turning the door in one direction the spindle will be turned on its axis so as to carry with it the lower end of the spring I, so that the spring is set to tension between the upper and lower collars. When the door is swung in the opposite direction, the upper tension-regulating collar will be turned, and thereby the spring be set to tension at its upper end by the action of the spindle. The proper tension of the spring is adjusted in the manner before described.

The advantages of my improved spring-hinge as compared with the different spring-hinges heretofore in use and on which rests its novelty are: First, the socket-shaped lower portion of the spindle and the center post of the casing permits the antifriction-balls to be placed close to the upper end of the spindle, so that a more reliable and steady motion of the same on its axis is obtained; second, by the arrangement of the opening for the locking-pin and the lugs for the tension-regulating key in the upper tension-regulating collar the tension of the spring can be regulated with great facility without the inconveniences heretofore experienced; third, by the covering up of the top plate of the casing by an additional plate dust and other coarse obstructions are excluded entirely from the spring-hinge, so that a reliable working of the same is secured.

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

1. The combination, with a casing provided with a bottom lug, of a spindle having its bearings in said casing, a top plate for said casing, provided with a central opening, and a segmental opening concentric thereto, a tension-regulating collar in the lower part of the casing, provided with lugs at diametrically

opposite points, a tension-regulating collar at the upper part of the casing provided with tension-holes on said spindle, a tension-spring between said collars, a flange on said spindle engaging with the upper lug on the lower collar, and a locking-pin passing through one of said tension-holes and projecting into said segmental opening and adapted to engage with said top plate, substantially as set forth.

2. The combination, with a casing provided with a bottom lug, of a top plate for said casing, a spindle provided with a lower socket-shaped portion, extending around the center post of the casing, and with an upper projecting portion, partly cylindrical and partly rectangular, to engage with the swivel-bar of the door, said top plate being provided with a central opening and a segmental opening concentric thereto, a tension-regulating collar in the lower part of the casing provided with lugs at diametrically opposite points, a tension-regulating collar at the upper part of the casing on the spindle, said collar having tension-holes, a coil-spring between said tension-regulating collars, a flange on the lower portion of the spindle engaging with the upper lug on the lower tension-regulating collar, and a locking-pin passing through one of the tension-holes in the upper tension-regulating collar after the spring is set to tension and engaging the flange of the lower socket-shaped portion of the spindle, substantially as set forth.

3. The combination of a casing provided with a stop at its bottom part and an upwardly-extending center post, a seat-disk supported on said post, a spindle provided with a lower socket-shaped portion, antifriction-rollers between said seat-disk and the spindle, the top plate for said casing provided with a central opening for the spindle, and a segmental opening concentric thereto, a lower tension-regulating collar provided with a bottom lug interlocking with the bottom lug of the casing and with an upwardly-extending lug diametrically opposite thereto, a flange on the socket-shaped portion of the spindle, an upper tension-regulating collar provided with a number of equidistant holes for the tension-pin, a coil-spring between said tension-regulating collars attached at opposite ends thereto, and a locking-pin dropped into one of the holes in the upper tension-regulating collar when the spring has been set to proper tension so as to abut against the end of the segmental opening, substantially as set forth.

4. In a spring-hinge, the combination of a casing, a spindle having its bearings therein provided with a lower socket-shaped portion and an upper projecting portion, a top plate for said casing having a central opening for the spindle, and a segmental opening concentric thereto, tension-regulating collars in said casing, a tension-spring between said collars, the upper collar having tension-holes and projecting lugs adjacent to said holes, and a

locking-pin for passing through one of the
holes in the upper collar after the spring has
been set to tension by means of the tension-
holes said locking-pin projecting into said seg-
5 mental opening and being adapted to abut
against the end wall thereof, substantially as
set forth.

In testimony that I claim the foregoing as
my invention I have signed my name in pres-
ence of two subscribing witnesses.

WILLIAM K. SANDSTROM.

Witnesses:

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M. H. WURTZEL.