E. BOMMER.

SPRING HINGE.

APPLICATION FILED DEC. 1, 1908.

924,422. Patented June 8, 1909.

Fig: 1.

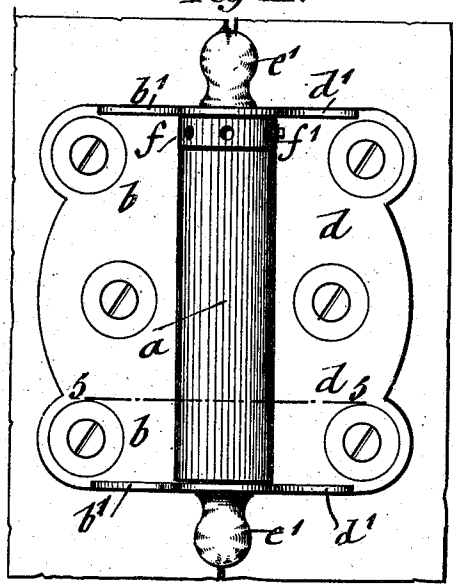


Fig: 2.

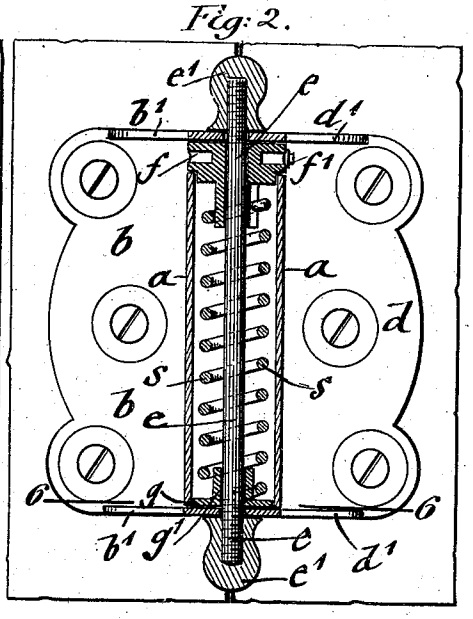


Fig: 3.

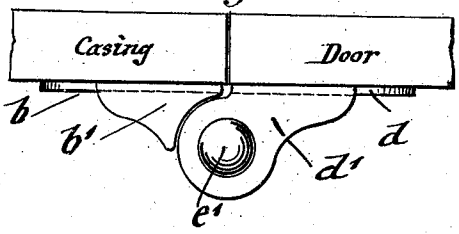


Fig: 4.

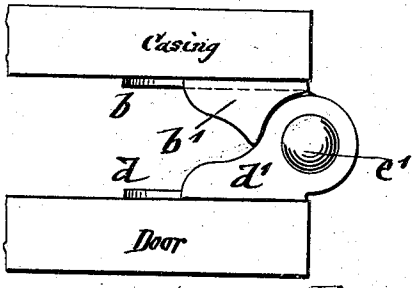


Fig: 5.

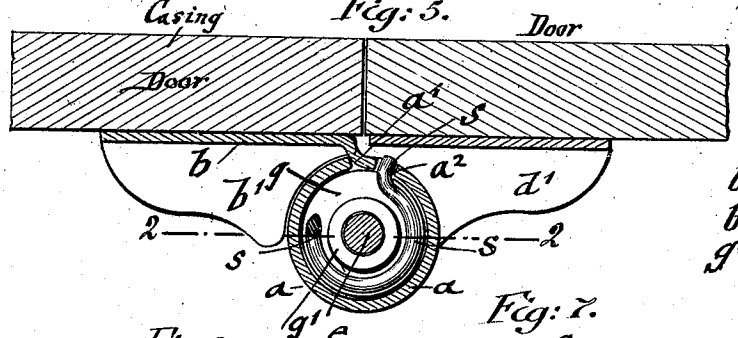


Fig: 6.

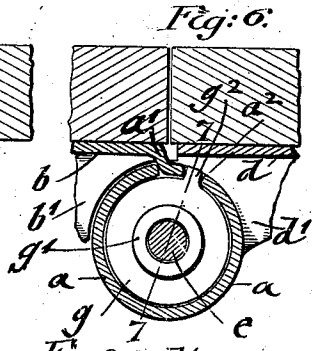


Fig: 7.

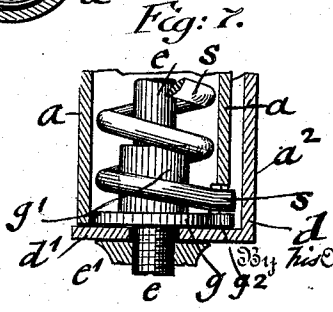


Fig: 8.

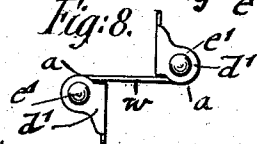
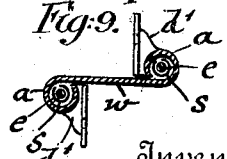


Fig: 9.



Witnesses:
Fannie Fisk
H. H. Siebert

Inventor
Emil Bommer
By his Attorney
Edgar Tate

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EMIL BOMMER, OF NEW YORK, N. Y.

SPRING-HINGE.

No. 924,422. Specification of Letters Patent. Patented June 8, 1909.

Application filed December 1, 1908. Serial No. 465,573.

To all whom it may concern:

Be it known that I, EMIL BOMMER, a citizen of the United States of America, residing in New York, in the borough of Brooklyn, county of Kings, and 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 spring-hinges in which the spring-barrel and flanges are stamped up from sheet-steel, the tension of the coiled springs made adjustable and the connection of the coiled spring with the spring-barrel made in a very simple and effective manner; and for this purpose the invention consists of a spring-hinge in which the spring-barrel is made integral with one flange, while the other flange is connected by bent-up and perforated ears with the pintle of the hinge, the barrel-flange being also provided with bent-up ears, which serve as stops for the door when placing it in open position and add stiffness to the flange.

The invention consists further of a spring-hinge, the spring-barrel of which is provided at its lower end with a recess in which the outwardly-bent lower end of the coil-spring is seated, in connection with a fixed holder having a radial lug that projects likewise into the recess of the spring-barrel and serves to hold the lower end of the spring in position in the barrel in connection with a central perforated boss, while the upper end of the spring is connected with a recessed lug on the tension-collar located at the opposite end of the spring-barrel.

The invention consists further of certain details of construction and combinations of parts which will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a front-elevation of my improved spring-hinge, Fig. 2 is a vertical central section of the same on line 2, 2, Fig. 5, Figs. 3 and 4 are top-views, showing the door in closed and open position, Figs. 5 and 6 are horizontal sections, respectively on lines 5, 5, Fig. 1, and 6, 6, Fig. 2, drawn on a larger scale, Fig. 7 is a detail vertical section on line 7, 7, Fig. 6, and Figs. 8 and 9 show the application of these improvements to a double acting spring-hinge of the type where the barrels are connected by an intermediate web.

Similar letters of reference indicate corresponding parts throughout the several figures.

Referring to the drawings, *a* represents the barrel of my improved spring-hinge. The barrel *a* is made of cylindrical shape and bent integrally with a flange *b*, which is provided with screw-holes for attaching it to the casing of the door. In bending up the barrel from the blank, a shoulder a^1 is formed at the point of connection of the barrel with the flange, as shown in Figs. 5 and 6, so as to offset the spring-barrel sufficiently from the vertical plane of the flange *b*. The opposite longitudinal edge of the spring-barrel *a* abuts against the shoulder a^1, so that the spring-barrel is closed up entirely, without showing any portion of the spring located within the same, when the door is open. At the upper and lower edges of the flange *b* are bent-up ears b^1, the object of which will be explained farther on. A second flange *d* is provided with screw-holes for the screws by which the flange is attached to the door, and with perforated ears d^1 which are bent up at right angles thereto. The perforated ears d^1 are larger than the ears b^1 of the flange *b* so as to provide for the arrangement of pintle-openings in the same. The pintle *e* is passed through the perforated ears d^1, a tension-collar *f*, the center of the barrel and coiled spring *s* in the same, and a fixed spring-holder *g* at the lower end of the barrel, the pintle being provided at the ends with ball-shaped tips or terminals c^1, which are provided with interiorly-threaded sockets for being screwed on the threaded ends of the pintle *e*, or the pintle-ends may be extended through holes in the terminals and attached thereto by upsetting the ends.

The coiled spring *s* is provided at the upper end with an inwardly-bent end, and at the lower end with an outwardly-bent end, the inwardly-bent end engaging the interior recessed lug of the tension-collar *f*, the latter being provided with radial holes for turning the tension-collar and imparting the necessary tension to the spring, after which a set-pin f^1 is inserted into the proper hole, said set-pin abutting against the flange *d* and holding thereby the coiled spring in tension. The lower outwardly-bent end of the coiled spring *s* is inserted into a recess a^2 at the lower end of the spring-barrel *a* and is thereby directly connected with the spring-barrel.

The spring-holder *g* is located below the

lower end of the spring *s* at the lower end of the spring-barrel *a*, as shown in Figs. 2, 6 and 7, and provided with a central perforated boss g^1 through which the pintle *e* is passed, and at one point of its circumference with a radial lug g^2 that enters into the recess a^2 below the outwardly-bent end of the spring *s*, for holding the lower end of the spring in position in the recess a^2 of the spring-barrel *a*. By extending the outwardly-bent end of the spring *s* into the recess a^2 and also retaining the spring-holder in fixed position by the lug g^2 engaging the same recess a^2, the use of a special fastening pin for securing the spring-holder in position in the barrel is dispensed with. The spring-holder *g* serves in connection with the centrally-perforated adjustable tension-collar *f* and the perforated ears d^1 of the flange *d* to support the pintle, to hold the spring in central position in relation to the pintle and barrel of the hinge, and to prevent the outwardly-bent end of the spring from being drawn out of the recess into the barrel.

The bent-up ears b^1 of the flange *b* are not perforated and are made at the edges adjacent to the spring-barrel concentric with the latter, so as to serve a three-fold purpose; first, to impart a symmetrical appearance to the spring-hinge as shown in Figs. 1 and 3; second, to serve as a stop for arresting the door when the same is placed in open position, and third to stiffen the flange, as shown in Fig. 4. When it is desired to simplify the spring-hinge still more, the spring-holder *g* can be entirely omitted, in which case the lower end of the spring is held in position by the recess in the lower end of the barrel and by the lower ear of the flange adjacent thereto.

The above description applies in general to single-acting spring-hinges, but is in its main particulars equally applicable to double-acting spring-hinges, in which there are two spring-barrels connected by a web W, Figs. 8 and 9, each barrel being provided with a recess at its lower end, the connecting web being stiffened by corrugations instead of bent-up ears, a double-acting spring-hinge of this type consisting for all practical purposes of two connected single-acting spring-hinges.

The advantages of my improved spring-hinge are, first, that the spring is entirely inclosed by the spring-barrel without being visible even when the door is in open position, whereby the ingress and settling of dust in the spring-barrel is prevented; and second, that the connection of the coiled spring with the lug of the tension-collar at one end and with the recess in the barrel in conjunction with the fixed spring-holder at the other end is produced in a very simple, reliable and effective manner and at a considerable reduction in the cost of the spring-hinge.

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

1. A spring-hinge comprising a closed cylindrical barrel, having a recess at its lower end, a flange made integral with the barrel, a second flange provided with bent-up perforated ears, a pintle passing through the barrel and the ears, a tension-collar at one end of the spring-barrel provided with a recessed lug, said tension-collar being provided with radial holes and a stop-pin in one of said holes, a coiled spring one end of which is bent inwardly for engaging the lug of the tension-collar and the opposite end outwardly for engaging the recess at the lower end of the barrel, and a fixed spring-holder provided with a radial lug also engaging the recess in the barrel below the outwardly-bent end of the coiled spring.

2. In a spring-hinge, the combination, with a spring-barrel, provided with a recess in its lower end, two flanges, one being made integral with the spring-barrel and the other provided with bent-up perforated ears, a pintle passing through the ears of one of the flanges and the spring-barrel, and a coiled spring located in said barrel and provided with an outwardly-bent end engaging the recess in the lower end of the barrel.

3. A spring-hinge provided with a closed cylindrical barrel, and a flange made integral with said barrel and connected with the same by a forwardly-bent shoulder for setting off the barrel from the plane of the flange.

4. In a spring-hinge, a spring-barrel, provided with an integral flange having bent-up, non-perforated ears at the upper and lower ends, the edges of said ears adjacent to the spring-barrel being made concentric with the same.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

EMIL BOMMER.

Witnesses:

PAUL GOEPEL,

HENRY J. SUHRBIER.