(Model.)

H. P. KOCHSMEIER.

SPRING HINGE.

No. 385,312. Patented June 26, 1888.

Fig. 1

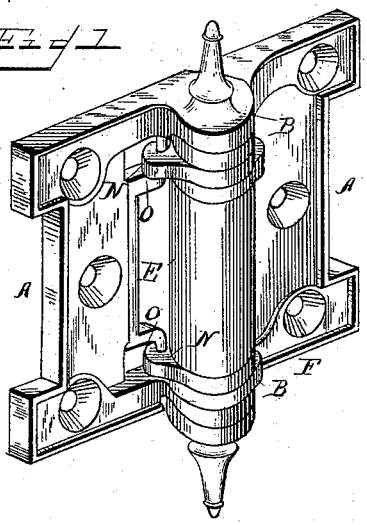


Fig. 2

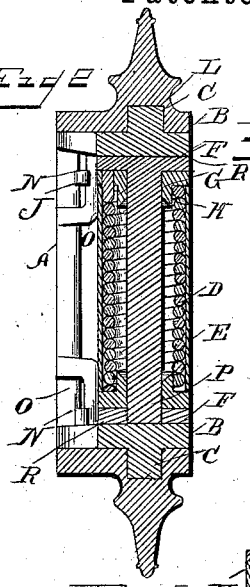


Fig. 3

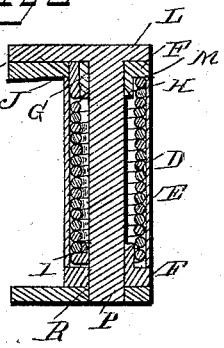


Fig. 4

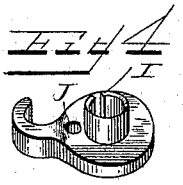


Fig. 5

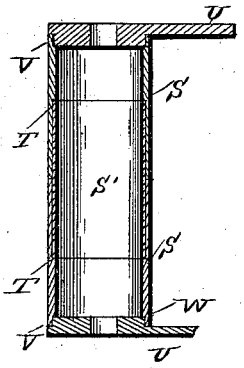


Fig. 6

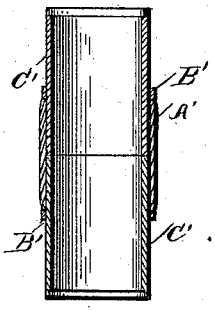
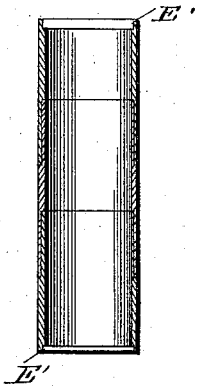


Fig. 7



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UNITED STATES PATENT OFFICE.

HENRY P. KOCHSMEIER, OF FREEPORT, ILLINOIS.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 385,312, dated June 26, 1888.

Application filed August 5, 1887. Serial No. 246,187. (Model.)

To all whom it may concern:

Be it known that I, HENRY P. KOCHSMEIER, a citizen of the United States, and a resident of Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Spring-Hinges; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of my improved hinge. Fig. 2 is a central vertical sectional view of the same. Fig. 3 is a sectional detail view of the spring and its cover removed from the hinge. Fig. 4 is a detail view of one of the end hooks. Fig. 5 shows the tubular covering for the spring constructed in two sections, with an interior tube or sleeve. Fig. 6 shows the tubular covering constructed in two sections, with an exterior tube or sleeve, and Fig. 7 shows the tubular covering for the spring constructed in three sections.

The same letters of reference indicate corresponding parts in all the figures.

My invention has relation to double-acting spring-hinges for swinging doors and the like; and it consists in the improved construction and combination of parts of the same, as hereinafter more fully set forth.

Referring to the several parts by letter, A A indicate the leaves of the hinge, which are formed at the ends of their inner edges with the obliquely-projecting ears or lips B, which are pivoted together upon the pintles C, concentric to each other.

D indicates the spiral spring, which is of any desired or required size and strength, and E indicates a tubular cover or casing, which is made of light metal and is open at both ends, and the spiral spring D is inclosed within this casing, the tubular casing being of sufficient length to entirely inclose the said spring. The ends of the tubular casing are closed by hook-caps F F, the said hook-caps being formed with the central apertures, G, and the collars H on their inner sides, which extend within the end of the tubular casing and within the ends of the coiled spring, as shown in the sectional views, Figs. 2 and 3 of the drawings, these collars of the hook-caps being formed with perforations or slots I opening through them at one of their sides, as shown, in which the ends of the coiled spring may fit, and thus the spring is caused to turn with the hook-caps when the latter are partly rotated, as hereinafter described; or, instead of these openings in the collars of the caps in which the inwardly-bent ends of the coiled spring fit, the said ends of the springs may be bent out at right angles parallel to the axis of the spring, so as to fit into holes J, drilled through the hook of the cap, as shown; or, instead of these holes, the hooks may be recessed at K, as shown in Fig. 4, so that the ends of the spring will fit in the said recesses, although I prefer to form the hooks with the drilled holes, as the spring is thus more effectually covered. The tubular casing or covering may be cast with the hook-cap on either end, as shown at L in Fig. 3 of the drawings; or the inner end of the hook-cap may be formed with an annular shoulder, M, as shown in the said sectional view, Fig. 3. These hook-caps are formed with the hooks N, the hooks being formed integral with the caps, as shown, and the inner edges of the two leaves A A are formed with the slightly outwardly-extending bails or bearings O O near each of their ends, on or around which the outer ends of the hooks of the caps are hooked, the spring being placed together in operative position by first placing the hook-caps in the ends of the tubular casing, with the ends of the coiled spring fitting in the apertures or recesses of the said caps, as before described, when a central rod, P, is run through the central apertures of the hook-caps on the ends of the tubular casing, passing of course through the said casing and through the coiled spring, and on the extremities of this rod are secured flat hook plates or caps R R, which fit against the outer sides of the hook-caps proper, and thus assist in holding the said caps in position, and also form a part of the hinge, as their hooked ends are hooked around the bails or bearings O O of the two leaves, as are also the hooked ends of the hook-caps proper, which close the ends of the tubular cover or casing, and to which the ends of the coiled spring in the said casing are secured.

It will be seen that when my improved

spring is secured to a door in its operative position, and the door is closed, the projecting lugs or ears B B will extend over the ends of the tubular casing and the several hook-caps, and as the hook-caps are hooked to the lugs or bearings of the leaves, and the ends of the coiled spring are secured to the said caps in either of the several methods shown and described, it will be seen that when the door is swung open the coiled spring will be twisted or coiled tighter, so that after the door has been opened beyond the position in which it stands at right angles to the wall or partition to which it is hinged the springs with the hook-caps will be forced out from a line with the pintles of the hinge-ears, and the tension of the spring will tend to draw the leaves to stand in a position parallel to one another, so that after the door has been opened beyond a certain distance it will be drawn open by the springs and held open by their tension. In the same manner, when the door is being closed and has been swung beyond a certain point, the tension of the springs will tend to force the door closed and to hold it in that position.

The tubular cover or casing, as above described, and illustrated in Figs. 1, 2, and 3 of the drawings, is constructed in a single piece, which is the most simple form; but, if preferred, it may be constructed in two halves or sections, S S, as shown in Fig. 5 of the drawings, with an interior tube or section or sleeve, S′, as shown in the said view, which fits within the said two sections at the central part thereof, its ends fitting against slight annular shoulders T, formed in each of the sections S S, and in this construction the end hook-caps, U U, are formed with reduced necks V, which fit in notches W in the outer ends of the two sections S S, as shown, so that when the hooks are hinged or hooked around the bails or bearings of the leaves the said two sections of the tubular covering or casing will turn with the hooks, and as the ends of the coiled spring contained within the said sectional casing are secured in the inner portions of the hook-caps, it will be seen that the spring will be twisted as the door is swung open, and will operate, like the spring in the hinge before described, to draw the door back open after it has passed a certain point and to hold it in its open position, and to pull the door closed when it has passed a certain point and to hold it in its closed position. The tubular casing may also be constructed, as shown in Fig. 6 of the drawings, of two main sections and an exterior sleeve or tube similar to the interior sleeve, S′, of the construction shown in Fig. 5, the ends of this exterior middle tube or sleeve, A′, bearing against annular shoulders B′ B′, formed on the exterior of the two sections C′ C′. The construction of the casing shown in Fig. 6 is otherwise similar to that shown in Fig. 5, its end caps, &c., being precisely similar. The tubular casing may, further, be constructed in three or more sections, as shown in Fig. 7 of the drawings, the said sections being formed with the annular shoulders and the reduced sleeve ends, as shown in the said view, this form of sectional casing being provided or formed with end notches, E′, and end hook-caps similar to those shown in Figs. 5 and 6.

From the foregoing description, taken in connection with the accompanying drawings, the construction, operation, and advantages of my invention will be readily understood. It will be seen that my improved cover or casing completely covers the spring in double-acting spring-hinges, thus completely and effectually protecting the spring from injury by the weather or otherwise, and also adding to the neatness of its appearance as well as to its durability. By the use of my improved cover or casing the spring not only presents a much neater appearance, but will also last much longer in use, as it is thoroughly protected from damp and moisture, &c. The tubular cover or casing may be constructed either in a single piece or in two or more sections, as set forth, and the ends of the coiled spring may be connected or secured to the end caps in any of the several methods described, while the hook-caps themselves may vary somewhat in construction without departing from the spirit of my invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

The combination, with the hinge-leaves having the projecting pivoted end ears and formed with the bails or bearings at their inner edges, of the tubular casing, the spiral spring, the hook-caps having the recesses or perforations, and the outer hook-plates connected by the longitudinal rod, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

HENRY P. KOCHSMEIER.

Witnesses:
W. N. CRONKRITE,
H. POFFENBERGER.