

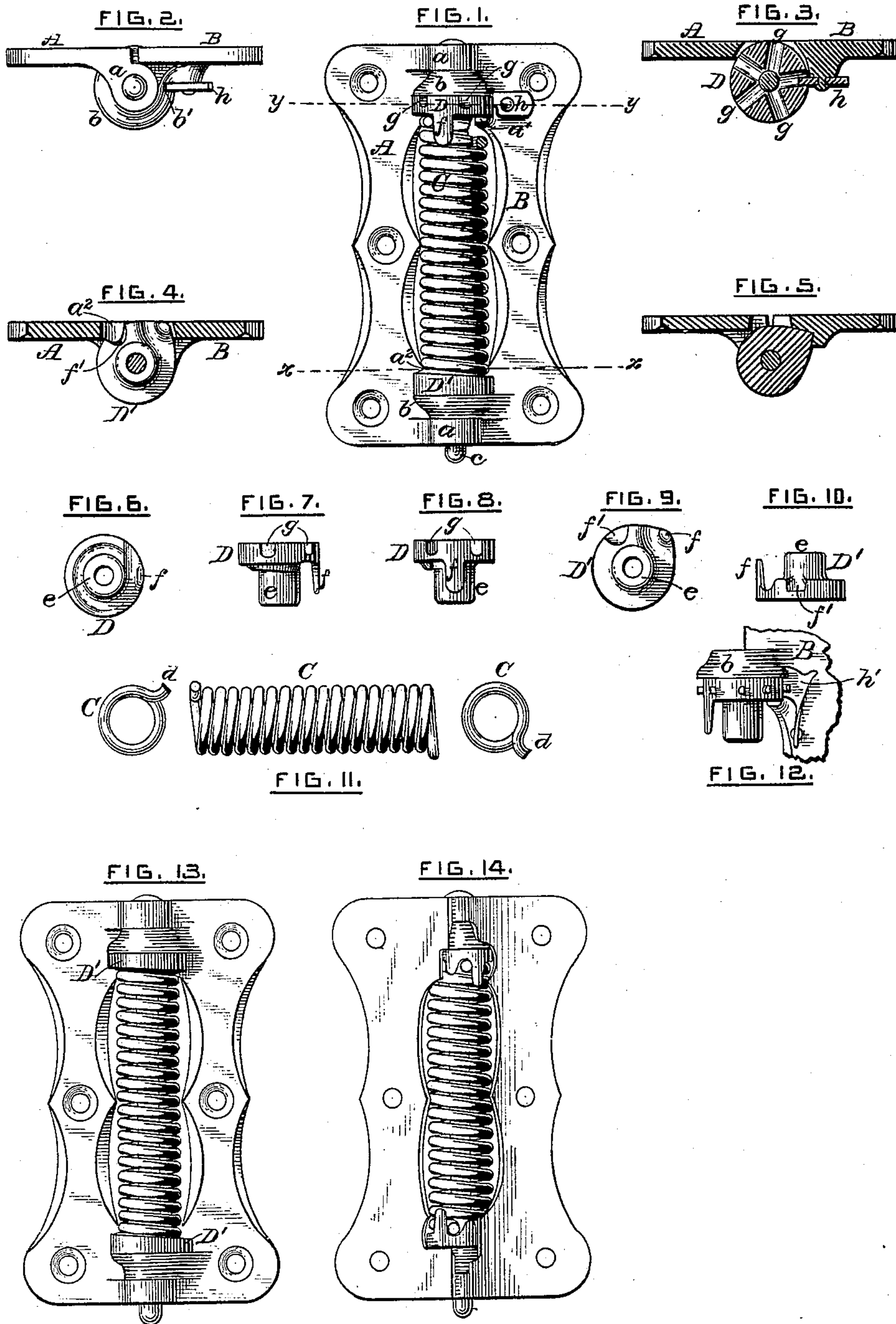
(Model.)

C. S. VAN WAGONER.

SPRING HINGE.

No. 258,510.

Patented May 23, 1882.



WITNESSES:

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SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 258,510, dated May 23, 1882.

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To all whom it may concern:

Be it known that I, CORNELIUS S. VAN WAGONER, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Spring-Hinges; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of the several features of my invention, all of which are adapted to adjustable spring-hinges, and some of them to such as are non-adjustable, and although they are illustrated as embodied in single-acting hinges they are equally applicable in whole or in part to those which are double-acting.

The several features of my invention, after a full description, will be separately designated in the several claims hereunto annexed.

Referring to the drawings, Figure 1 is a front view of one of my novel spring-hinges as applied to a door and its frame, the upper end of the spring at one side being broken away. Fig. 2 is a top view of the hinge. Fig. 3 is a horizontal section of the same on line *y y*, Fig. 1. Fig. 4 is a similar section on line *x x*. Fig. 5 is a sectional view similar to Fig. 4, illustrating a modification of construction whereby the non-adjustable spring-lug is locked against independent rotation. Fig. 6 is a top view of the adjustable spring-lug detached. Figs. 7 and 8 are side views of the adjustable spring-lug. Figs. 9 and 10 are respectively top and side views of the non-adjustable lug detached. Fig. 11 represents the spring detached in end and side views. Fig. 12 is a view illustrating an adjustable spring-lug and an automatic spring-latch. Figs. 13 and 14 are respectively front and rear views of a non-adjustable spring-hinge embodying certain features of my invention.

The leaves A and B of the hinge have, as usual, the ears *a* and *b*, and a hinge rod or pintle, *c*, which is preferably headed at its upper end, and readily removable longitudinally. The ears *b* in the better class of hinges are preferably enlarged, as shown in Fig. 1, to generally correspond in outline with the ears *a*, and also with the spring-lugs hereinafter described.

The spring C, as heretofore, has abutting

ends *d*, which project radially, and although short they are enabled to engage with a firm hooking effect upon the stud. Both ends of this spring are precisely alike, and therefore it is capable of use with spring-lugs which, so far as relates to their engagement with the spring, may also be exactly alike, and consequently the several parts of the hinge may be more rapidly and cheaply assembled than when, because of difference in the ends of the spring, the latter can only be placed in one particular way into the hinge.

D and D' denote respectively the adjustable and non-adjustable spring-lugs. These, as heretofore, are axially mounted upon the pintle-rod *c*, and they have cylindrical necks *e* for occupying the interior of the spring, at each end thereof, for accurately centering the same; but as a novel feature they each have an abutting stud, *f*, which projects therefrom parallel with the axis of the lug and outside of the spring when the latter is in position, so that the terminal coil of the latter occupies the space between said stud and the cylindrical neck, and the radially-projecting end of the spring engages with or hooks against one edge of said stud. The surface of the lug surrounding the base of the neck *e* is made to conform to the surface of the terminal coil of the spring, so as to afford a good bearing therefor, and at the opposite end of the lug there is a smooth bearing-surface for flatly engaging with the inner surface of the adjacent hinge-ear.

The adjustable spring-lug D has a good bearing-surface against the coincident surface of the enlarged ear *b*, and it is provided with a series of radial recesses, *g*, said recesses being open at the top of the lug as well as at the edge thereof. When the lug is in position the adjacent ear *b* covers the top of the lug, thus making the recesses practically the same as radial holes for the reception of a pin or a nail for locking it, or for setting the spring, as in well-known pintle-socket tension devices.

For locking the lug under any desired tension I employ a locking device which is permanently attached to the hinge, as shown in Fig. 1, wherein the latch or bolt is a swinging plate riveted to the leaf of the hinge; but said locking device is only novel when considered

with reference to its combination and arrangement with reference to adjacent parts of the hinge. This lock or bolt is capable of being swung only downwardly for engaging with the lug, and upwardly for disengaging, and when in said engagement one end thereof rests upon the bottom of the recess occupied by it, and the recesses in the lug being closed from above by the ear *b*, the latter is provided with an open radial slot, as at *b'*, for use with a locking-bolt, so that as the swinging bolt passes downward it passes through said slot into a recess in the lug, and when the spring is under tension the bolt has a firm seat in said slot *b'*, from which it cannot accidentally be displaced.

With or without the slotted ear I can conveniently employ with a spring-lug having the stud and neck described, a spring-latch, as illustrated in Fig. 12, wherein, instead of radial recesses in the lug, the latter is provided with inclined-faced projecting pins, with which the spring-latch *h'* engages, said latch having a spring-metal shank secured in a split stud cast integrally with the leaf of the hinge. As thus constructed, the latch will automatically operate while increasing the tension of the spring, but will have to be held back when tension is released. The pins will require a special device for turning the lug, after the manner of a hose-wrench, and therefore the variation in tension could be limited to a person having possession of the wrench; but the radial recesses require only a pin or nail for setting the tension, and are therefore generally preferable; but both the recesses and the studs could be employed in the same lug, accompanied by an automatic spring-latch.

It is well known that in working a spring-hinge the spring is more or less expanded and contracted longitudinally, and the spring-lugs are therefore liable to be moved toward and from each other by the movements of the ends of the spring in contact therewith. The adjustable spring-lug *D* is limited to a rotative movement by me by means of an inwardly-projecting stud, *a'*, formed on the inner edge of leaf *B* and extending slightly beneath the lug *D* near its periphery, so that the latter is thereby prevented from moving longitudinally on the pintle-rod *c*. For similarly confining the non-adjustable lug *D'* the leaf *A* of the hinge has at its inner edge an inwardly-projecting stud, *a''*, Fig. 4, formed thereon, which, by contact with the surface of the lug near its periphery, prevents it from rising on the pintle-rod *c*. The lugs being thus confined against longitudinal movement causes the hinge to operate much more smoothly than if they were free to slide on the pintle-rod, as heretofore. Both of the abutting ends of the spring are preferably free to slide in contact with the studs *f* during the lengthening and shortening of the spring, although said studs might each be provided with a lateral recess for receiving the ends of the spring, and so obviate any sliding action, if desirable, as would be the case with a long heavy spring.

The stud *a'* on leaf *B* not only confines the adjustable spring-lug to a rotative movement on the pintle-rod *c*, but it also serves an important function as a safety-stop, whereby the spring is assured against being set under an injurious tension. The spring-lug *D*, in setting the tension, should never be made to make more than one revolution, (springs seldom being capable of safely working under a tension greater than that due to one revolution of the lug,) and said stud *a'* projects so far inwardly as to serve as a stop against which the stud *f* abuts when the proper limit of tension has been attained.

The stud *a''* on leaf *B* not only prevents the non-adjustable lug *D'* from being moved up and down on the pintle-rod *c* by the spring, but it also locks said lug against all rotative movement, because it occupies a recess, *f'*, in said lug. This locking of a non-adjustable lug against rotation except with the leaf of the hinge on which it abuts is of consequence in an adjustable spring-hinge, because when the hinge is used without spring-tension the lug always maintains its proper working position and requires no manipulation preparatory to setting the tension of the spring, and in a non-adjustable spring-hinge lugs thus locked against independent rotation and against a sliding movement on the hinge-pintle contribute largely to the efficient working and durability of the spring-hinge as a whole. This locking of the non-adjustable lug against independent rotation may be obtained without having the lug recessed, as described, but in lieu thereof the adjacent leaf of the hinge may be recessed for receiving a projecting portion of the lug, as indicated in Fig. 5, and said lug may also be prevented from sliding on the pintle rod by having said projection on the lug abut against a surface of the recess parallel with the plane occupied by the lug.

I am aware that non-adjustable spring-lugs have heretofore been locked so as to be only capable of rotative movement with one leaf of a hinge, as shown in the United States Patent of Acker, November 18, 1862, No. 36,976; but I am the first to provide for thus locking a spring-lug located between one ear of the hinge and the coincident end of a spring, as shown by me.

In Figs. 13 and 14 I show a non-adjustable hinge embodying my novel spring, and the two non-adjustable lugs *D'*, (shown in Figs. 4, 9, and 10,) and they are each arranged in reference to the leaves of the hinge like the one lug before described. The use of lugs in a non-adjustable spring-hinge is deemed by me of practical value, especially in the more expensive heavy varieties, because the centering of the spring is thereby assured and good seats for the spring obtained, and the abutting ends of said spring may therewith be located wholly at the rear of the hinge and practically in line with each other, affording a much neater finish than when said ends are exposed on each side. While it would be possible to cast the

leaves of the hinge with a stud, *f*, neck *e*, and a suitable inclined seat for the end of the spring, it is much cheaper in practice to cast the lugs separately, for if, for instance, the whole were cast integrally with a leaf of the hinge, and one stud should fail to be perfectly formed in the casting, the whole leaf would be worthless; and it is therefore always desirable that the leaves be as free as possible from any parts which would tend to complicate the molding and casting operations.

I desire it to be distinctly understood that I am well aware that detachable spring-lugs have heretofore been provided with a neck extending into a spiral spring, as is illustrated in the United States Patent of Acker, No. 36,976, November 18, 1862; but the separable lug as therein shown and described was not used as by me between the end of a spring and the inner surface of a hinge-ear, or between two ears which were located upon one leaf of a hinge.

I am also aware that hinge-leaves have heretofore been provided with ears having necks cast thereon for entering the spring, and that such have been employed with a spring which had one of its ends extended outward and upon the adjacent leaf of the hinge.

I am also aware that a detachable lug provided with a neck for occupying the interior of a spring and slotted for the reception of an inwardly-bent end of the spring has heretofore been employed between a hinge-ear and a spring; but so far as my knowledge extends I am the first to employ a detachable spring-lug having a neck for entering the spring, a stud for engagement with the end of said spring, and a bearing-surface for engagement with the inner face of a hinge-ear, resulting in the several advantages hereinbefore set forth.

It will be seen that although the tension-lug shown in Fig. 1 is capable of being used and set by means of a nail or a pin, I obviate the cost of drilling radial holes as heretofore, because my recesses, being open on top of the lug, can be formed readily in casting the lug.

It will be obvious that the separate features of my invention may be more variously organized than hereinbefore indicated, and that all of them may be employed in one hinge, or employed in part in combination with hinges or parts thereof constructed as heretofore.

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

1. The combination, in an adjustable spring-hinge, of the radially-recessed spring-lug, a hinge-ear having a vertical open slot, and a swinging latch or bolt which engages with the spring-lug through the slot in the hinge-ear, substantially as described.

2. The combination, with the hinge-leaves and a spiral spring between the upper and lower hinge-joints, of a non-adjustable spring-lug, which is between the end of said spring and a coincident ear of the hinge, has a bearing against one leaf of the hinge, and is locked thereto against independent rotation, substantially as described.

3. The combination, with the spring and the adjustable rotating tension-lug in a spring-hinge, of a stop which limits the rotation of the lug, and thereby limits the tension of the spring, substantially as described.

4. A detachable spring-lug provided with a neck for entering a spiral spring and centering it, and an abutting stud parallel with the axis of the lug and affording a space between the stud and neck for the reception of the terminal coil of a spring, and a bearing-surface for the inner face of a hinge-ear, substantially as described.

5. A tension-lug for adjustable spring-hinges, provided with radial recesses open at the top of the lug and its edge, in combination with a hinge-ear which closes said recesses at one side thereof, substantially as described.

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