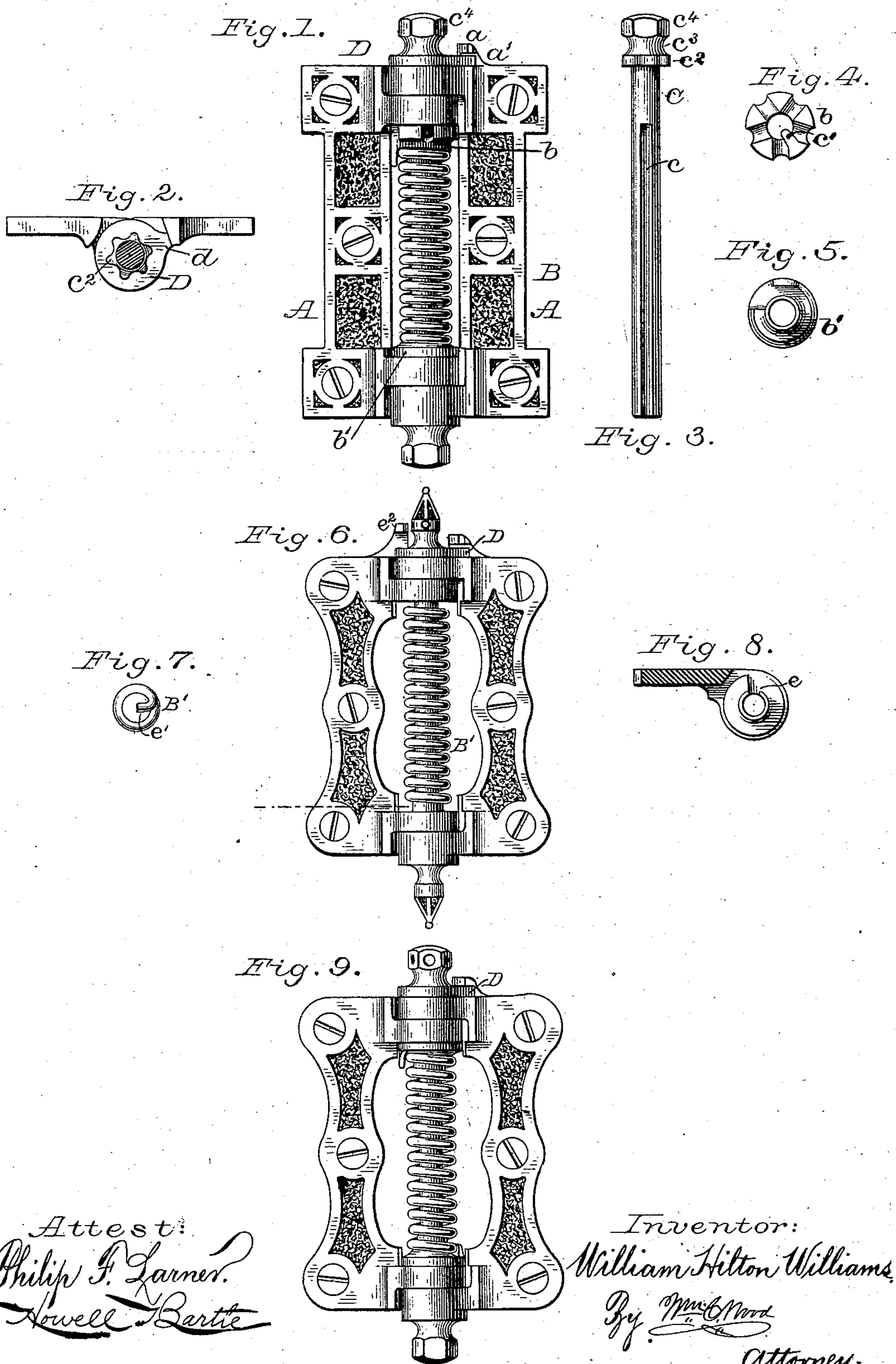


(Model.)

W. H. WILLIAMS.
SPRING HINGE.

No. 281,594.

Patented July 17, 1883.



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SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 281,594, dated July 17, 1883.

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To all whom it may concern:

Be it known that I, WILLIAM HILTON WILLIAMS, of Brooklyn, in the county of Kings and State of New York, have invented certain
5 new and useful Improvements in Adjustable 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 my invention.

One object of my invention is to provide, in a loose-jointed spring hinge or butt, a locking-collar located at or near one end of the hinge, and outside of the ears thereof. The location
15 of a locking-collar at one end of the hinge is very desirable in spring-hinges, because of its ready accessibility and consequent convenience for manipulation during the adjustment of the spring. With the locking-collar located at the end of the hinge, and outside of
20 the ears thereof, a desirable finish is readily obtained, because said collar in its outline may be made exactly to conform to the outline of the ear against or upon which it rests. It is not
25 broadly new to employ a locking-collar at one end of a spring-hinge—as, for instance, in the close butt or hinge shown in the United States Patent of Acker, No. 29,212, July 17, 1860, wherein the locking-collar engages with
30 a spring-lug, and there are involved therein a construction and arrangement which are inapplicable to a loose-jointed butt; and therefore I have so organized the parts of my hinge that said locking-collar engages with the hinge-
35 pintle, and enables me either to use one or two separable spring-lugs between the pairs of hinge-ears or to wholly dispense with such lugs in the manufacture of the cheaper class of hinges. In said Acker hinge the locking-
40 collar is non-detachable from the hinge only when the spring is under tension, and it is therefore liable to be accidentally displaced when the hinge is used as an ordinary hinge, with its spring free from tension.

Another object of my invention is to so connect the locking-collar to the hinge that it cannot be detached when the hinge is in use as a free hinge, or while the hinges are in stock and subjected to ordinary handling.

50 I am aware that door-springs embodying locking-collars or equivalent devices have been

provided with separate lower and upper brackets, and means by which the locking-collars are prevented from being detached from said upper brackets, or from the spindles having
55 bearings in said brackets; also, that in some cases the detachability of said collars is only prevented when the door-springs are actually mounted on a door and its frame, and in other cases when the door spring is unmounted as
60 well as mounted, their spindle having a head of larger diameter than the inside diameter of the locking-collar; and it is to be therefore understood that I make no claim to a non-detachable locking-plate as applicable to door-
65 springs, but limit myself to the combination of such a locking collar or plate with a spring-hinge pintle, which not only unites the two leaves of a hinge, but also unites therewith the spring and the locking-plate, thus enabling
70 a new locking-plate to be readily substituted for a broken one without removing the hinge from its mounted position, and without necessity of displacing the spring or its lugs, whereas with the door-springs referred to either the
75 upper or the lower of the two brackets must be removed and the spring first bodily detached from the spindle before the latter can be removed, from the bracket for the application of a new locking-collar.
80

After a full description of my improvements the several features of my invention will be specified in the claims hereunto annexed.

Referring to the drawings, Figure 1 is a front view of a hinge embodying my said im-
85 provements in their most desirable form. Fig. 2 is a top view of the same with the head of the hinge-pintle removed. Fig. 3 is a side view of the hinge-pintle detached. Fig. 4 is a top view of the upper spring-lug detached.
90 Fig. 5 is a top view of the lower spring-lug detached. Fig. 6 is a front view of a hinge without separable spring-lugs, but embodying the main features of my invention. Fig. 7 is a detached view of either end of the spring shown
95 in Fig. 6. Fig. 8 is a top view of a hinge-ear shown in Fig. 6. Fig. 9 is a front view of a hinge having two spring-lugs like the lower lug of Fig. 1, and embodying certain features of my invention.
100

The leaves A of the hinge shown in Fig. 1 differ from those of prior hinges, in that one

leaf has at its upper inner edge a projection, a , in which there is a lateral recess, a' , and also in that the uppermost hinge-ear has a flat surface in line with said recess.

5 The spring B, the radially recessed upper spring-lug, b , and the lower spring-lug, b' , are similar to those in the spring-hinge heretofore devised by C. S. Van Wagoner. The hinge-pintle C is rotative in the ears of the hinge, 10 and is longitudinally slotted, as at c , for affording a means for its direct or indirect connection with one end of the spring B. In the hinge shown in Fig 1, the spring and slotted 15 spring-lug, Fig. 4, which is provided at its eye with an inwardly-projecting spline, c' , which occupies the slot c in the pintle, thus rotatively connecting said pintle and lug, the latter being provided with a stud against which 20 one end of the spring abuts.

I am well aware that the slotted rotative pintle in itself is not new—as, for instance, it is found in the hinge shown and described in the United States Letters Patent of Brewer, 25 No. 198,533, December 25, 1877. As shown by me, the slot c is long enough to enable it to engage with either the upper or a lower spring-lug, or with the upper or lower end of a spring, if no lugs be used; but if it is to be engaged by 30 a lower spring-lug, or by the lower end of a spring, said slot need extend from its lower end only slightly above the lower hinge-ear, or above a lower separable lug, if one be used. My hinge-pintle is, however, novel, in that it 35 has near its top a polygonal or cog-shaped flange, c^2 , a neck, c^3 , smaller in diameter than the flange, and a polygonal head, c^4 , which is larger than said flange. The head is polygonal in form, so that a wrench or other similar 40 device may be readily applied for rotating said pintle and setting the spring; but except as hereinafter indicated in my claims, I do not limit myself to such a head, as it is obvious that it may be round, and provided with 45 one or more radial holes for the reception of a pin, which will enable the pintle to be rotated, and if such a pin be left in one of said holes it will serve also as a means for connecting the locking-collar to the hinge, as herein- 50 after more fully described.

The locking-collar D is substantially annular in form, has its interior edge polygonal or cog-shaped, as the case may be, so as to fit upon and lock with the flange c^2 of the pin- 55 tle, and it has a projecting arm, d . This collar has a flat bearing-surface upon the upper side of the uppermost hinge-ear, and its arm d projects over upon the adjacent hinge-leaf and normally occupies the recess a' . In its 60 best form and arrangement, as shown, this flange conforms in outline with the coincident hinge-ear, and in effect it has the general appearance of being a part of said ear; and I prefer, in order to render the hinge symmetrical, 65 that the lower ear on the same leaf be made as thick as the combined thickness of the upper ear and the locking-collar, as shown in Fig. 1.

The locking-collar is also free to be rotated upon the neck c^3 of the pintle when lifted from the flange c^2 , thus providing for the rotation 70 of the pintle and the collar independently of each other—as, for instance, while the spring is being set, or when the force of the spring is not desired; and in the latter case, after the collar has been thus turned upon the neck of 75 the pintle, it is again seated upon the flange with its arm d projected oppositely from the recess a' , it being held in that position by the pintle, which is, under those circumstances, maintained against independent rotation by 80 the end of the spring bearing without strain against the upper lug, which is splined to the pintle, the lower spring-lug being non-rotative, and hence preventing the spring from rotating when loose and when the hinge is in use as an 85 ordinary hinge. While the collar is not operating as a locking-collar, as described, it is secured against accidental detachment from the hinge by the head c^4 , which is larger than the central opening in the collar. When the head 90 c^4 is polygonal, it may alone be relied upon for setting the spring; but when an adjusting spring-lug is used the head of the pintle may be round, or of any other form not suitable for use with a wrench. Except as indicated in 95 my claims, I do not limit myself to the polygonal head of the pintle, or to a cross-pin therein for securing the locking-collar against the accidental detachment of the collar from the hinge, because it may obviously be otherwise 100 secured—as, for instance, by an overhanging stud—on either hinge-ear, as hereinafter described, which will prevent its detachment except upon the complete removal of the pintle. The locking-collar and a rotative pintle having 105 a serrated flange which is larger in diameter than the adjacent portion of the pintle constitute a valuable improvement, regardless of the particular location of said flange and collar, and, so far as my knowledge extends, I am 110 the first to employ, with a rotative spring-adjusting hinge-pintle, a locking-collar which is mounted upon said pintle, and is free to be locked thereto or rotated thereon.

I have shown in Figs. 6 to 8, inclusive, a 115 cheap form of hinge, wherein no separable spring-lugs are employed. In other words, either ear of the hinge is provided with a neck, which is vertically slotted, preferably at its rear side, as seen at e in Fig. 8, said slot be- 120 ing for the reception of an inwardly-turned end, e' , of the spring B', (shown in Fig. 7,) which is an old and well-known way of arranging one or both ends of a spring, so that when employed with the slotted rotative hinge- 125 pintle already described one of said spring ends occupies the slot in said pintle and the other end occupies the slot in the hinge-ear, thus affording a neatness of finish not heretofore attainable in spring-hinges wherein no 130 separable spring-lugs are employed, because both ends of said spring may be concealed from view by being located at the rear side of the hinge. In the hinge, Fig. 6, I show an

overhanging projection, e^2 , from one leaf of the hinge, which prevents the detachment of the locking-collar D, although the pintle has a head which is smaller than the central opening in said collar, and when the collar is thus secured it is obvious that it cannot be displaced except after the removal of the pintle, and the consequent separation of the hinge-leaves.

10 In Fig. 9 I show a hinge having two separable spring-lugs; but neither of them serves in itself as an adjusting device, as does the lug b in Fig. 1, although either the upper or the lower lug is splined to the pintle, as in Fig. 1, and the other is locked against rotation by abutting contact with one hinge-leaf; but both of these lugs are of course engaged by the ends of the spring, as heretofore. In this case, as with the hinge shown in Figs. 6 to 8, inclusive, it is obvious that the pintle itself constitutes the sole adjusting device, and the locking-collars D, employed therewith, are precisely the same as that shown in Fig. 1, and these variations in construction and arrangement are introduced to partially illustrate the value of the rotative spring-controlling pintle and the locking-collar, which is capable of being locked to said pintle or of being rotated thereon, regardless of the particular arrangement of the parts or construction of the spring, or of the presence or absence of separable spring-lugs, and whether the latter be adjustable or non-adjustable.

It will be readily seen that when a separable spring-lug is connected with the pintle so that both must be rotated together, as I have shown, if the pintle be polygonal at its shank and the eye of the lug correspondingly formed to snugly receive it, each will be non-rotative independently of the other, precisely the same as if the lug were specially splined thereto in the manner shown; and therefore I do not limit myself to the slotted pintle in a combination embodying a spring-lug connected so as

to rotate therewith, although the slotted pintle has special value when the spring directly engages therewith, as shown in Fig. 6.

Although, as hereinbefore stated, the main object of my invention is to improve loose-jointed butts, I do not preclude myself from such advantages as would accrue from the use of my improvements in connection with a pintle so applied to the hinge that the latter would be substantially a close-jointed butt, provided always that the pintle was rotative and had the locking-collar thereon, as described, so as to be locked thereto or rotated thereon.

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

1. The combination, substantially as hereinbefore described, with the hinge-leaves and spring, of a rotative hinge-pintle, and adjusting spring-lug locked to said pintle and engaged by one end of the spring, and a locking-collar upon the neck of the pintle, which is free to be rotated thereon or locked to said pintle.

2. The combination, with the hinge-leaves and spring, of the longitudinally-slotted rotative hinge-pintle which controls said spring, and a locking-collar which is adjacent to the neck of the pintle, is free to rotate thereon or to be locked to said pintle, and is inseparable from the hinge while the pintle is in position.

3. In a spring-hinge, the combination, with the rotative longitudinally-slotted hinge-pintle having a head, of the locking-collar mounted upon one ear of the hinge, beneath the head and adjacent to the neck of said pintle, and having a central opening smaller than said pintle-head, substantially as described, for securing the collar against detachment from the hinge, except upon withdrawal of the pintle.

WILLIAM HILTON WILLIAMS.

Witnesses:

FRED QUACKENBUSH,
C. T. STORK.