(Model.)

H. C. HART & J. W. CROSS.

SPRING HINGE.

No. 269,411. Patented Dec. 19, 1882.

Fig. 1.

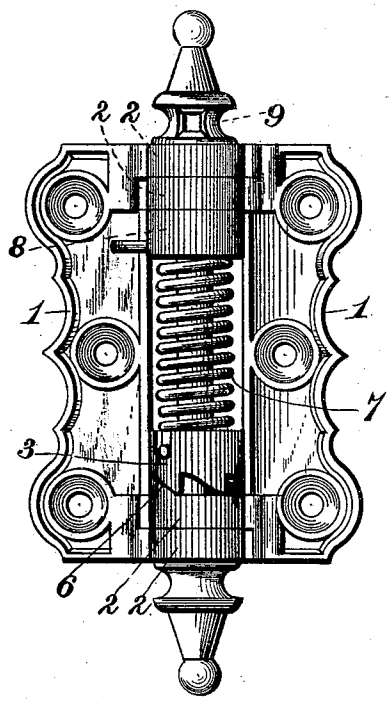


Fig. 2.

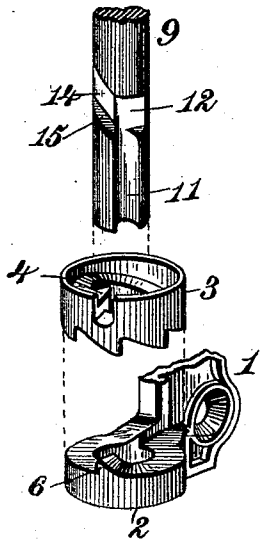


Fig. 3.

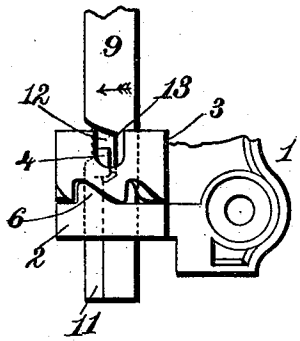
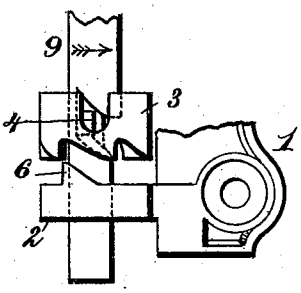


Fig. 4.



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UNITED STATES PATENT OFFICE.

HENRY C. HART AND JAMES W. CROSS, OF DETROIT, MICHIGAN, ASSIGNORS TO THE CLARK HARDWARE COMPANY, OF SAME PLACE.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 269,411, dated December 19, 1882.

Application filed September 29, 1882. (Model.)

To all whom it may concern:

Be it known that we, HENRY C. HART and JAMES W. CROSS, citizens of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented new and useful Improvements in Hinges, of which the following is a specification.

This invention relates to improvements in the spring-hinge for which Letters Patent No. 244,185 were issued on the 12th day of July, 1881, to Messrs. Clark and Hart, in which the hinge is composed of two leaves, having eyed lugs, through which passes a connecting-pintle provided with a longitudinal groove in its lower end, a ratchet-collar being arranged on the pintle and having an interior lug to engage the groove, said collar being caused to automatically engage a stationary stop on the eye of one hinge-leaf, and adapted to rotate with but slide along the pintle when the latter is rotated to tighten up or increase the tension of the spring. In the practical use of such hinges objections exist in that it is difficult to relieve or release the tension of the coiled spring which throws the ratchet-collar into engagement with the stationary stop, and the pintle is liable to work vertically out of proper position.

The object of our invention is to avoid these objections and to provide such a construction of pintle that when rotated in one direction the ratchet-collar will be turned to tighten up the coiled spring and increase its tension; but when rotated in the opposite direction the ratchet will be lifted from engagement with the ordinary stop, and the tension of the spring be thereby relieved or released, the operation being such that the collar is lifted from its engagement with the stop to permit one tooth to ride over the latter in a direction to relieve the tension of the spring, when the longitudinal elasticity of the latter will again throw the collar into engagement until the pintle is again rotated to again lift the collar and permit one tooth to ride over the stop, such movements being repeated until the tension of the spring is relieved to the required extent.

The object of our invention we accomplish in the manner and by the means hereinafter explained, and illustrated in the accompanying drawings, in which—

Figure 1 represents a plan view of a spring-hinge embodying our invention; Fig. 2, a broken perspective view of the pintle, the lower portion of one of the hinge-leaves and the ratchet-collar, these parts being separated to more clearly show the construction of the pintle; Fig. 3, a view of the parts shown in Fig. 2, when arranged together for operation, the pintle being in the position it occupies when it is rotated to tighten up or increase the tension of the spring; and Fig. 4, a view similar to Fig. 3, showing the position of the parts when the pintle is rotated to lift the ratchet-collar, and thereby disengage it from the stationary stop, to permit the spring to expand and relieve its tension.

The hinge herein shown is in all respects identical with the hinge forming the subject-matter of the Letters Patent before mentioned, except in the construction of the pintle and the manner of operating the ratchet-collar to relieve or release the tension of the spring.

The numbers 1 indicate the leaves; 2, the eyed lugs; 3, the ratchet-collar; 4, its interior lug; 6, the stationary stop with which the ratchet-collar engages, and 7 the coiled spring, the upper end of which sets within a collar, 8, while its lower end rests within the ratchet-collar and is secured thereto by extending its end through a slot in the same.

The pintle 9 is provided with the longitudinal groove or recess 11, the upper or inner end of which terminates in a groove or recess, 12, which extends transversely in a straight direction around the pintle and forms the shoulder 13. At the upper end of the longitudinal groove or recess is provided a recess, 14, which is arranged to extend diagonally or obliquely in a direction around the pintle in such a manner as to form the diagonal or inclined cam-shoulder 15.

When the parts are in proper relative position, and it is desired to tighten up the tension of the spring, the pintle will be rotated in the direction of the arrow, Fig. 3, which causes the straight transverse groove or recess 12 to pass

over the interior lug, 4, of the ratchet-collar until the said lug bears against the vertical shoulder or termination 13 of the said groove or recess 12, when a continued rotation of the pintle will turn the collar and cause its teeth to successively ride over and engage the stationary stop 6, and this is repeated until the required tension is obtained. The formation of the straight transverse groove or recess 12 is such that when the required tension of the spring is obtained the lug 4 of the collar will be retained in said groove or recess with sufficient firmness as to prevent its accidental rotation and vertical displacement, the shoulder 13 coming under the bottom edge of the lug 4, and thereby preventing the pintle from working vertically.

If at any time it becomes necessary to relieve or release the tension of the coiled spring, this can be quickly performed by rotating the pintle in a reverse direction, as represented by the arrow in Fig. 4, which causes the interior lug on the collar to enter the diagonal or oblique groove or recess 14 and engage the incline or cam shoulder 15, which latter, by the continued rotation of the pintle, acts on the lug in such manner as to lift the collar until one of its teeth is permitted to pass by the stationary stop 6, when the longitudinal elasticity of the coiled spring will immediately throw the collar again into engagement with the stop, the lug on the collar in such movement returning down the incline or cam-shoulder 15. The continued rotation of the pintle in this manner successively lifts the ratchet-collar from engagement with the stop and permits its teeth to successively ride over and engage the said stop, the coiled spring acting to relieve its tension, and by its expansion causing the lug on the collar to descend the incline or cam shoulder in effecting the successive engagements of the collar and the stop.

Having thus described our invention, what we claim is—

1. The combination, with the coiled spring and the collar having an interior lug and adapted to engage a locking-stop, of a pintle having a diagonal or oblique groove or recess at the upper portion of its longitudinal groove to form an incline or cam projection, which serves to lift the collar from engagement with the stop when the pintle is rotated in one direction, substantially as described.

2. The combination, with the coiled spring and the collar having an interior lug and adapted to engage a locking-stop, of a pintle having a straight transverse groove or recess and a diagonal or oblique groove or recess at the upper portion of its longitudinal groove to form the pintle-retaining shoulder and the collar-lifting incline or cam, substantially as described.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

HENRY C. HART.
JAS. W. CROSS.

Witnesses:
ROBT. A. LIGGETT,
JAS. B. ORMISTON.