

C. S. VAN WAGONER.

Methods of Manufacturing Door-Springs.

No. 158,339.

Patented Dec. 29, 1874.

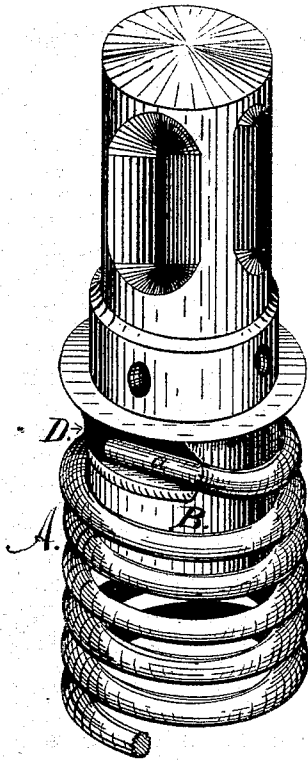


Fig. 1.

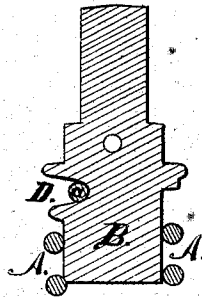
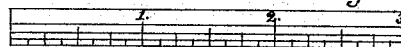


Fig. 2.

Scale of Inches for Fig. 2.



Witnesses:

Thomas Houghton
A. E. Sommers

Inventor;

Cornelius S. Van Wagoner
by
Samuel A. Skilton
his atty.

UNITED STATES PATENT OFFICE.

CORNELIUS S. VAN WAGONER, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN THE METHODS OF MANUFACTURING DOOR-SPRINGS.

Specification forming part of Letters Patent No. **158,339**, dated December 29, 1874; application filed November 6, 1874.

To all whom it may concern :

Be it known that I, CORNELIUS S. VAN WAGONER, of the city of Brooklyn, county of Kings, and State of New York, have invented an Improvement in Door, Gate, and Shutter Springs, of which the following is a specification :

The object of my invention is to secure the coiled spring upon the lug of the adjustable cap of the coiled door-spring in such a manner that they shall have the requisite firmness of attachment to give the cap proper control of the spring, combined with the requisite flexibility and proper safeguard against breakage of the spring, and also enable me to give the spring a higher temper. Where the split lug inserted into the coil, with the end of wire taking in the vertical cut of the lug, is used, in the simple independent door-spring, apart from the tubular-eyed hinge, or where other allowance hitherto contrived has been made for the lengthening and shortening of the spring, there is a constant tendency on the part of the cap to tilt and occasionally disengage. Where this difficulty has been attempted to be met by a perfectly rigid fastening of the parts, the effect has been to throw the whole strain and action of the adjustment onto the spring at one place, where it sooner or later gives out and breaks. Where the spring is coiled directly on the lug, or on a mandrel of the same size as the lug, I find it impossible to fix and maintain the spring exactly as coiled, when released. A slight remaining tension in the spring takes effect on its release, and slightly enlarges the coil and the size of its bore, or just enough to relax its hold on the lug, and thereby develop a defect in the organization. My invention proposes to overcome these difficulties.

I coil the wire on a mandrel slightly smaller than the lug before tempering it, and so that, when the relaxation and enlargement of the coil take place, the lug still requires to be forced into the coil, and fits tightly therein. The lug is substantially cylindrical in form, and at the upper part, just below the collar, has a transverse depression, D, three-quarters of an inch or so in length, to receive so much of the upper end of the coiled spring-wire *a*. Before tempering the spring, I insert the lug forcibly into the end of the coil,

and bend the end of the wire into the transverse depression provided for it while the metal of the spring is comparatively soft and pliable. I thus avoid the weakening of the metal which occurs when this operation takes place after the spring is tempered. I then temper the spring while these parts—the adjustable cap, with its lug, and the spring—are thus secured together, and after all coiling and bending of the wire has been completed. Consequently, I am able to give the spring a much higher temper than would be possible where the temper is given first and the coiling and bending are done afterward, since the tendency to break the wire in coiling and bending increases with the temper.

The effect sought and produced, in addition to the higher temper of the spring, is an increased gripe of the lug by the spring, resulting from the slight contraction of the coils incident to or consequent of the operation of tempering.

The amount of contraction resulting from tempering varies with the temper, from high to low, increasing as the temper is made higher, and, when carefully managed, this contraction alone may be made to answer the purpose, and in a measure secure the object sought.

When made in the manner proposed by me, the force used in adjustment is distributed along the wire of all the coils grasping the lug, and therefore does not act injuriously at any one place or spot in the spring.

Figure 1 of the drawing shows an enlarged adjustable cap, with the lug B provided with the transverse depression D, into which a depressed portion, *a*, of the coiled-wire spring A is bent. Fig. 2 shows a sectional view of the same not enlarged.

I claim as my invention —

The improvement in the art of manufacturing coiled door-springs described, consisting in first mechanically securing the coiled spring upon the lug of the adjustable cap tightly, and thereafter tempering the spring when thus attached to the lug.

CORNELIUS S. VAN WAGONER.

Witnesses:

WILLIAM M. GRAY,
H. T. PATTERSON.