S. A. CASE.

Machine for Shaping Springs.

No. 212,895. Patented Mar. 4, 1879.

Fig. 1.

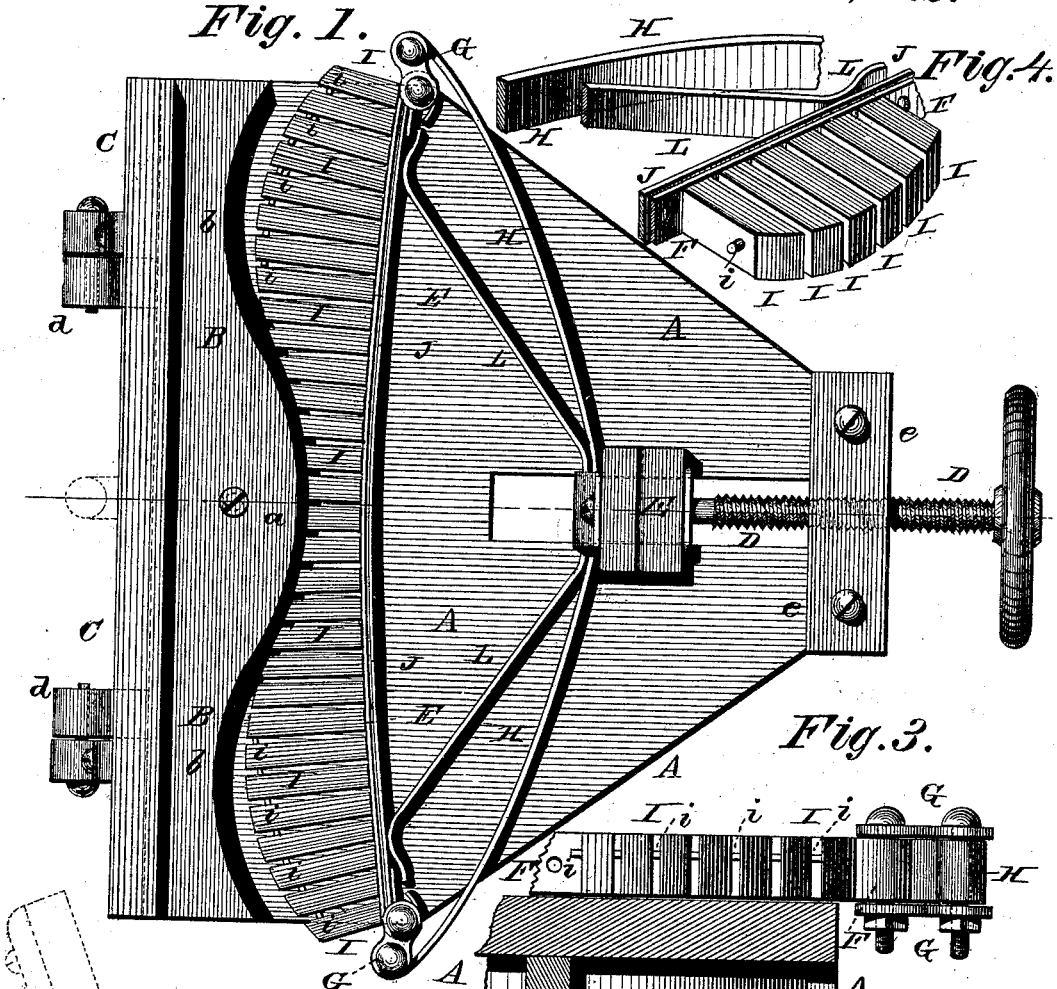
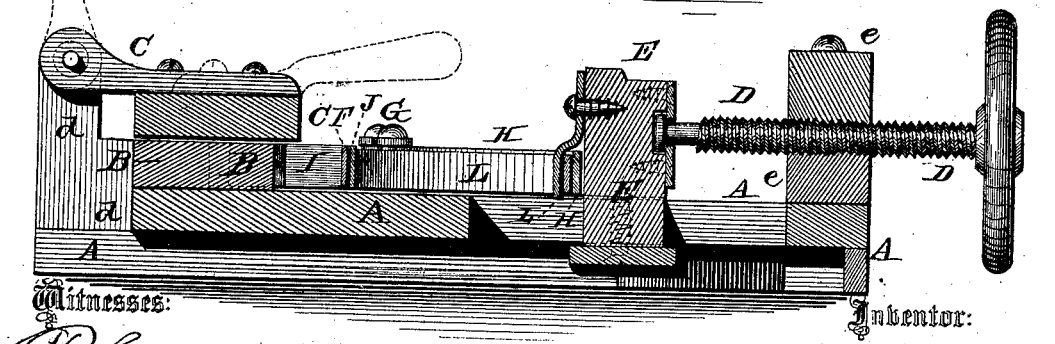


Fig. 4.

Fig. 3.

Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

STEPHEN A. CASE, OF AMSTERDAM, NEW YORK.

IMPROVEMENT IN MACHINES FOR SHAPING SPRINGS.

Specification forming part of Letters Patent No. **212,895**, dated March 4, 1879; application filed January 9, 1879.

To all whom it may concern:

Be it known that I, STEPHEN A. CASE, of Amstersdam, in the county of Montgomery and State of New York, have invented certain new and useful Improvements in Machines for Shaping Springs; 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, and to the letters of reference marked thereon, which form a part of this specification.

The nature of my invention consists in the construction and arrangement of a machine for shaping springs, whereby platform or other springs can be made with more than one curve, as will be hereinafter more fully set forth.

In the annexed drawings, which fully represent the invention, Figure 1 is a plan view, and Fig. 2 a central vertical section, of the machine. Figs. 3 and 4 are detailed views of parts thereof.

A represents the bed-plate of the machine, upon which is secured the solid former B. This former is made with more than one curve, having a central convex part, *a*, and a concave part, *b*, at each end, or of any other form, according to the shape of the spring desired.

The solid former B, though stationary, is of course removable, so that another former of different shape may be substituted. Back of this former are posts *d d*, to which the drop C is hinged. This drop is for the purpose of straightening the edges of the spring in conjunction with the bed-plate, the same as in other machines of this character.

In the center, at the opposite end of the bed-plate from the drop, is an arm or bearing, *e*, through which passes the screw D, for operating the flexible former, the inner end of said screw being swiveled in a head, E, which slides in a groove or slot in the bed-plate A.

The flexible former is composed of a series of lugs, I I, attached to a flexible band, F. These lugs are of varying length, to form any number of curves, and correspond with the curves of the solid former used. If the solid former had only one curve, the lugs of the flexible former might all be made of the same length; but as my invention is intended to shape springs into two or more curves, it is necessary to have the lugs of different length, to press or force the plate into and around all the curves of the solid former.

At each end of the flexible former a number of the lugs I are provided with check-pieces *i*, between them at their outer ends, for the purpose of preventing the lugs from drawing away from the plate as it contracts in cooling.

On the back of and against the flexible band F is laid a steel strap, J, and the ends of the band and the strap are connected by clips or hinges G G, to which the ends of the main steel spring H are also connected, thus forming joints between said main spring and the flexible former and the steel strap J. The center of the main spring H is connected, in any suitable manner, to the sliding head E.

It will be noticed that all the strain on the flexible former is taken up by the steel strap J, and hence in case of breakage it is this strap that will break, and not the flexible former. This can be more easily repaired than if any part of the former itself were broken, by simply inserting a new steel strap. The strap J also distributes the pressure more evenly, and presses the flexible former with greater force against the solid former. In addition to this, one or more re-enforcing springs, L, are arranged to bear against the steel strap J at such points between the ends of the flexible former as may be necessary to make the pressure equal. The points at which this spring or springs are to bear depends, of course, upon the particular curves of the two formers.

In operation, the plate is placed between the two formers on the bed, and by means of the screw D the flexible former is pressed or forced toward the solid stationary former B, the main spring H, and steel strap J, aided by the re-enforcing spring L, or its equivalent, giving the required pressure to bend the plate into the desired form of two or more curves. When the plate is thus bent and held, the drop C is let down to straighten the edges, and then raised again, after which water is poured on to cool and temper the spring.

With this machine springs having more than one curve, and of almost any configuration, can be practically made equally as well as those having only one curve.

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

1. In a machine for bending or shaping springs, the solid or stationary former B, having the two curves, as described, upon which springs may be shaped or formed, in the manner and for the purpose herein set forth.

2. In a machine for bending or shaping springs, a flexible former composed of lugs of different lengths, in combination with a solid stationary former having two or more curves, for the purposes herein set forth.

3. The check-pieces *i*, arranged between the lugs I at each end of the flexible former, for the purposes herein set forth.

4. The combination, with the flexible former, of the steel strap J, hinged joints G G, and main spring H, substantially as herein set forth.

5. The combination of the flexible former, the main spring, and the re-enforcing spring or springs, substantially as and for the purposes herein set forth.

6. The combination of the flexible former F I, the steel strap J, main spring H, and re-enforcing spring L, substantially as and for the purposes herein set forth.

7. The combination of the flexible former F I, steel strap J, hinges or joints G G, main spring H, and re-enforcing spring L, substantially as and for the purposes herein set forth.

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

STEPHEN A. CASE.

Witnesses:
GEO. V. MONTGOMERY,
M. L. STOVER.