

(No Model.)

2 Sheets—Sheet 1.

O. S. & W. S. FOSTER.
MACHINE FOR COILING SPRINGS.

No. 264,071.

Patented Sept. 12, 1882.

Fig. 1.

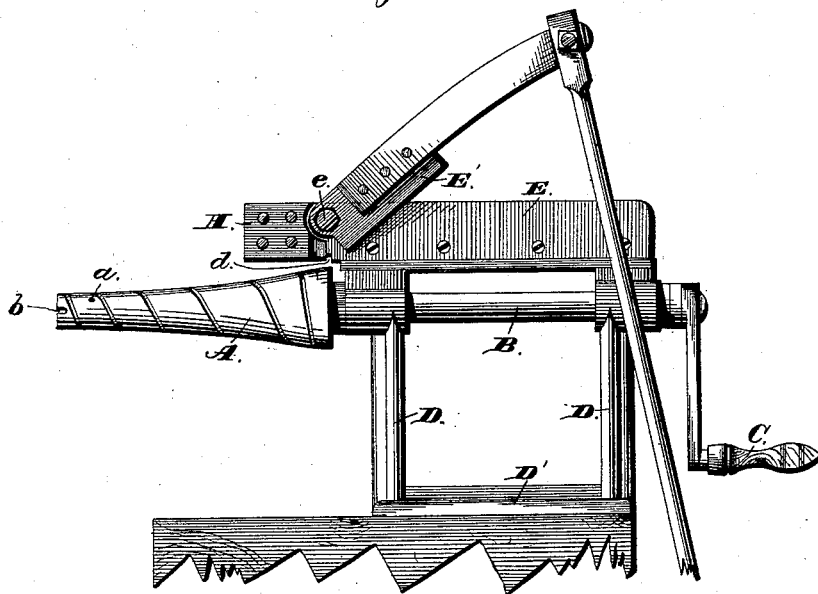
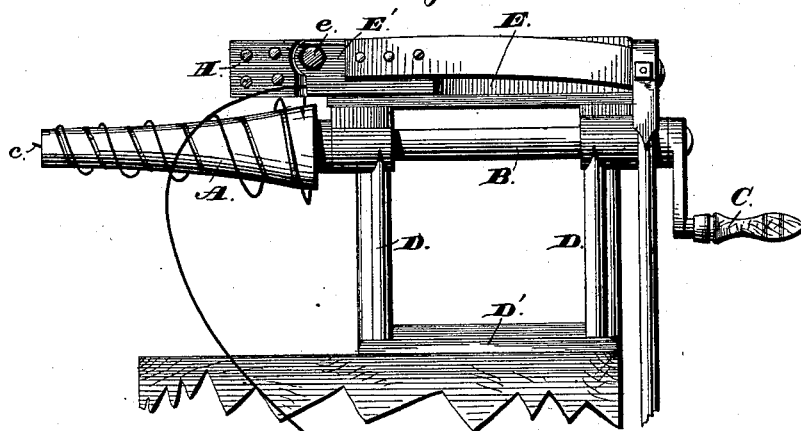


Fig. 2.



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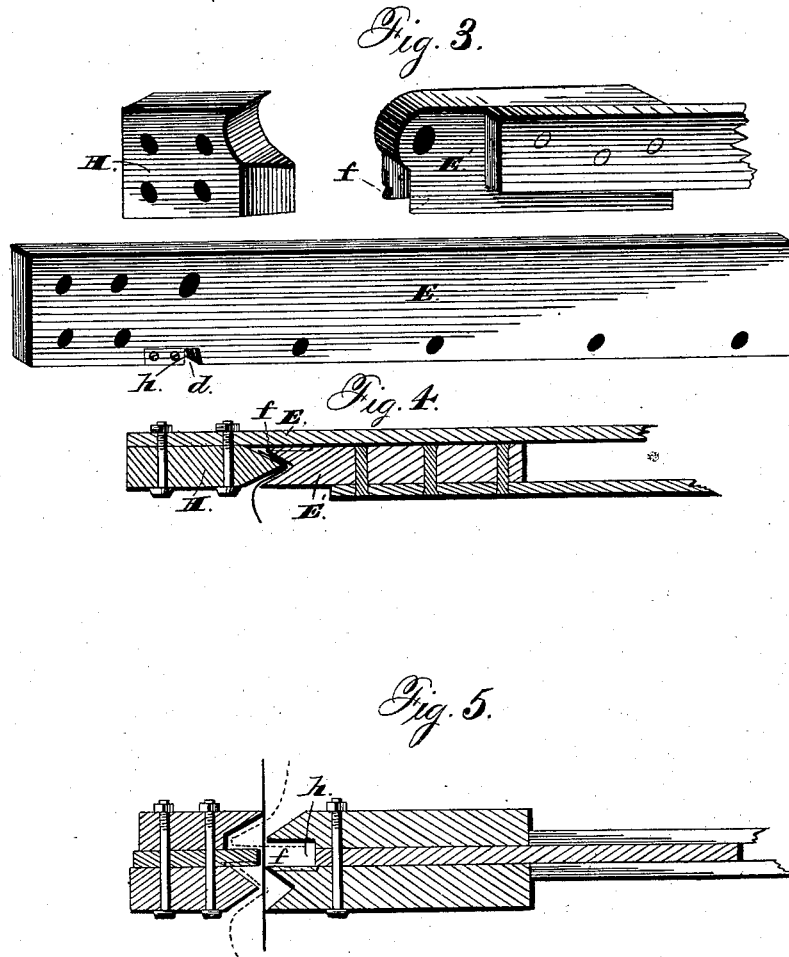
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UNITED STATES PATENT OFFICE.

OSCAR S. FOSTER AND WILLIAM S. FOSTER, OF UTICA, NEW YORK.

MACHINE FOR COILING SPRINGS.

SPECIFICATION forming part of Letters Patent No. 264,071, dated September 12, 1882.

Application filed July 10, 1882. (No model.)

To all whom it may concern:

Be it known that we, OSCAR S. FOSTER and WILLIAM S. FOSTER, of Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Machines for Coiling Springs; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Our invention relates to an improvement in machines for coiling springs, and more particularly spiral bed-springs, the object of the same being to provide a device of this character which shall combine simplicity and economy of construction with durability and efficiency in use; and with these ends in view our invention consists in the parts and combination of parts, as will be more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side view of our improved device, showing the cutting and bending mechanisms in open adjustment. Fig. 2 is a similar view with the parts closed. Fig. 3 shows detached views of the cutting and bending mechanism. Fig. 4 is a horizontal sectional view through the bending and cutting mechanism, and Fig. 5 represents a modification.

A represents the ordinary cone, provided with spiral grooves, and mounted on the shaft B, and operated by the crank C. This shaft B is journaled in the upright standards D, which latter are secured to or form a part of the base D'.

The old method of forming these springs was to insert one end of the straight wire into the hole *a* of the cone A and give the cone a quarter-turn forward while the operator held the wire. This operation formed the bend *c* at the end of the wire, which bent portion formed the point of the spring. The next thing in order was to insert the end of the wire, bent as described, into the slotted end *b* of the cone. The wire was then firmly held and directed into the grooves with one hand and the crank turned with the other, which coiled the spring-wire on the said cone until sufficient wire

was wound thereon to form the spring. The next step was to cut the coiled spring from the strip, which operation was performed with ordinary shears or with cutters acting directly against the coiling-cone.

Having described the old method, which was partly performed by the parts already referred to, we will now describe our improvements, which are adapted to be secured above the cone in such a position as to cut the wire when sufficient has been coiled thereon and bend the end of the wire forming the next spring at one and the same operation.

E represents a flat metallic bar, secured in any suitable manner to the standards D above the shaft B, and adapted to project slightly over the cone A, so as to enable the bending and cutting mechanisms which are secured to the said bar to occupy a position over or near the base of the cone. The lower edge of this bar E is provided with a slot, *d*, the front edge or wall, *h*, of which is a cutting-edge, which can be formed integral with the said bar or separate and removable therefrom, as desired, so as to enable a new one to be easily substituted in case the old one should break. This fixed portion of the shears acts in conjunction with the hinged portion or jaw E', which latter is pivoted to the bar E by the bolt *e*, and is connected to the pitman F by the lever G. This hinged portion, when not in use, is held up in open position, as shown in Fig. 1, by any suitable spring, so as to enable the spring-wire to be introduced into the slot *d* without the necessity of opening the jaws of the shears. The outer or operative end of the hinged jaw E' is V-shaped in cross-section, as shown in Fig. 4, and is adapted to register with the rigid jaw H, which conforms in shape to the V-shaped end of the hinged jaw E', and accurately registers therewith. The inner edge, *f*, of the jaw E' forms the cutting-edge of the said hinged jaw, while the remaining portion of the said hinged jaw, together with the rigid jaw H, serves to bend the end *c* of the wire shown in the drawings. This inner cutting-edge of the jaw E' can be formed integral with the said jaw, if desired; but we prefer to make it removable therefrom and secured thereto by screws, which enables the said cutting-edge to be removed for any purpose when necessary.

The operation of our improved device is as follows: The end of a continuous strip of wire is first turned, as shown at *c*, by means of our improved bender, and is introduced into the slot *b* on the end of the cone. The cone is then revolved in the proper direction by means of the handle, and the wire is guided in the grooves the same as in the old method. When enough wire has been coiled on the cone to form the spring the rotary motion of the cone is discontinued and the pressure of the hand on the coiled spring is relieved. This allows the spring to partly unwind or widen, as shown in Fig. 2, and then the end of the coiled spring, which is now a part of the continuous spring-metal strip, is introduced in the slot *d* in the bar *E*. The treadle is now forced down, and the cutting mechanism, which is slightly in advance of the bending mechanism, cuts the coiled spring from the strip. By continuing the pressure on the treadle the severed end of the strip is firmly pressed between the convex and concave V-shaped jaws, as shown in Fig. 4, which bends the end of the wire in the form of a V for the next spring. This bent end is then introduced into the slot *b* and the operation continued indefinitely.

In the modified construction represented in Fig. 5 we have shown a second set of bending-jaws secured on the opposite side of the bar *E*, and adapted to bend the end of the formed spring while the bending and cutting mechanism before described severs the formed spring from the wire strip and bends the end of the strip for the next spring. In this construction the movable jaw is cut away, as shown at *h*, thereby dispensing with a cutting-edge on the second jaw, which is not needed. This end of the spring can be bent in the same or opposite direction from the bend before described.

In some styles of springs it is not necessary that either end be bent, and in this case the stationary bending jaw or jaws can be removed from the bar *E*, leaving only the hinged jaw or jaws which sever the spring from the strip.

By the use of our improved machine the hole *a* in the cone *A* is dispensed with, and the time heretofore employed in bending the end of each wire and severing the spring from the continuous strip is saved, which increases the capacity of the machine without any increase of exertion on the part of the operator.

Our invention is susceptible of being changed so as to bend the end of the wire in any desired angle or direction, and can also be used for coiling other styles of springs than those shown and described.

It is evident that slight changes in the construction and arrangement of the different parts might be resorted to without departing from the spirit of our invention, and hence we would

have it understood that we do not limit ourselves to the exact construction shown and described, but consider ourselves at liberty to make such changes as come within the spirit and scope of our invention.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a machine for coiling metal springs, of combined cutting and bending mechanism placed in close proximity to the coiling mechanism, and adapted to sever the coiled spring from the spring-metal strip and bend the end of the strip to form the point for the next spring at one and the same operation.

2. In a machine for coiling bed-springs from a continuous strip of spring-wire, the combination, with a grooved cone having a slotted end, of a combined cutter and bender situated in close proximity to the cone, and adapted to sever the spring from the strip and bend the end of the strip to form the point of the next spring, substantially as set forth.

3. The combination, with a grooved cone having its smaller end traversed by a slot, of a bar secured to the frame of the machine and located directly over said cone, said bar being provided with a cutting-edge which is located close to the larger end of the cone, a pivotal cutter arranged to coact with the cutting-edge of the said bar, and means for operating said pivotal cutter, substantially as described.

4. In a machine for making bed-springs, the combination, with suitable coiling mechanism, of the bar *E*, slotted as described, and provided with a rigid cutting edge or jaw and a rigid V-shaped bending-jaw removably secured thereto, and a combined cutting and bending jaw pivoted to the said bar, and constructed as described, and adapted to operate in conjunction with the rigid cutting-edge and bending-jaw, substantially as set forth.

5. In a machine for making bed-springs, the combination, with the coiling-cone, of the bar *E*, slotted as described, and provided with a removable cutting-jaw and a rigid bending-jaw secured thereto, and a combined cutting and bending jaw pivoted to the said bar, and adapted to operate in conjunction with the removable cutting-jaw and rigid bending-jaw, all of the above parts constructed and adapted to operate as described.

In testimony that we claim the foregoing we have hereunto set our hands.

OSCAR S. FOSTER.
WILLIAM S. FOSTER.

Witnesses:

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