(No Model.)

J. N. SHORT.

APPARATUS FOR FORMING SPRINGS, &c.

No. 375,577. Patented Dec. 27, 1887.

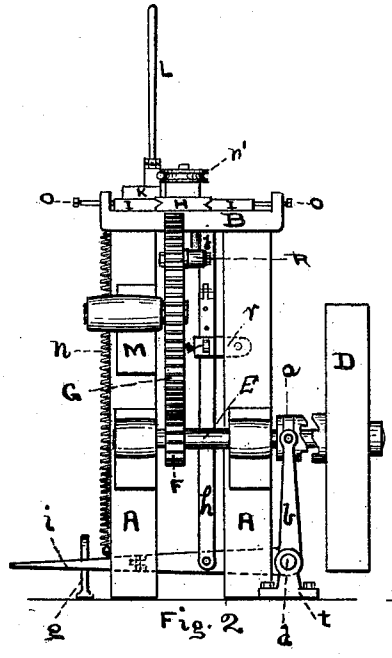


Fig. 2

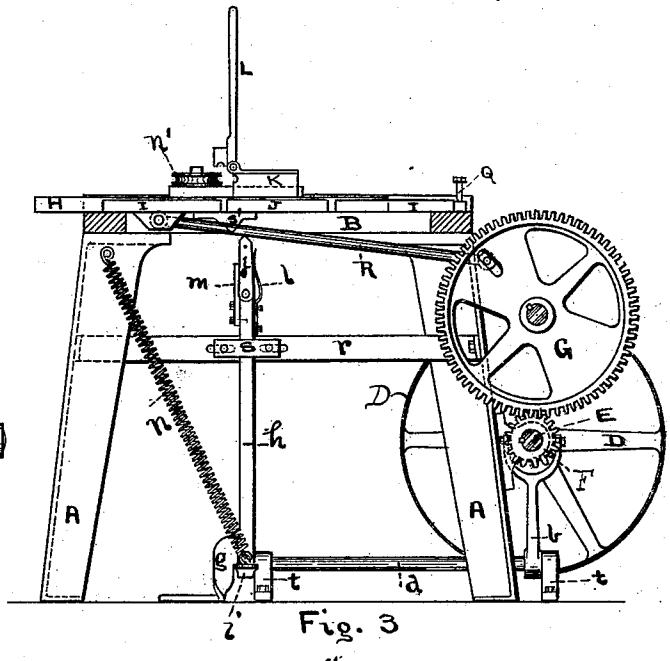


Fig. 3

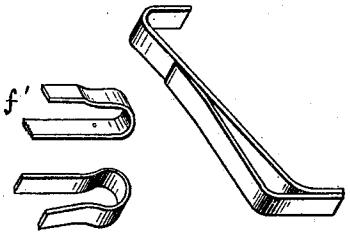


Fig. 5

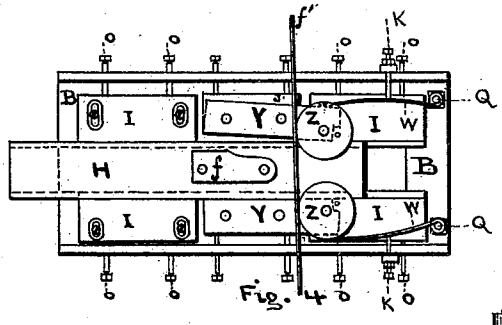
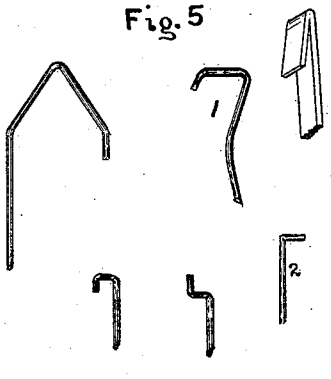


Fig. 4



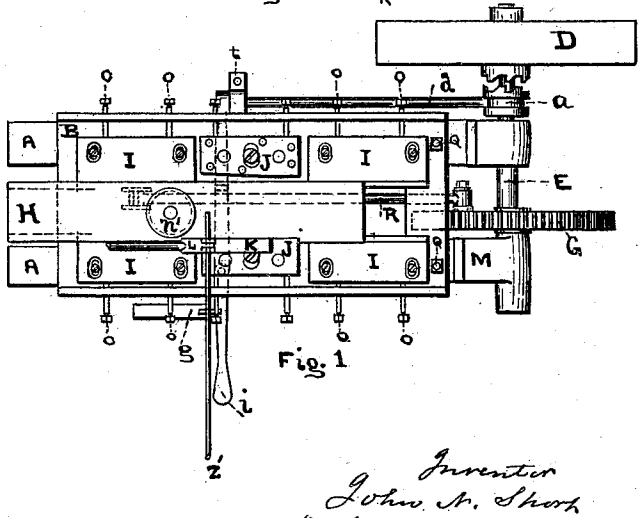


Fig. 1

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By his Attorney
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UNITED STATES PATENT OFFICE.

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APPARATUS FOR FORMING SPRINGS, &c.

SPECIFICATION forming part of Letters Patent No. 375,577, dated December 27, 1887.

Application filed July 9, 1887. Serial No. 243,841. (No model.)

To all whom it may concern:

Be it known that I, JOHN N. SHORT, a citizen of the United States, residing at Johnstown, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Forming Springs of Various Forms, Fence-Pickets, Carrier-Teeth, &c.; and I do hereby declare that the following is a full, clear, and exact description of the invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a top view of the machine; Fig. 2, an end view, and Fig. 3 a side elevation, of the machine; Fig. 4, a top view of the top plate of the machine, and Fig. 5 represents a few of the different forms that can be shaped on the machine.

Similar letters refer to similar parts in all the figures.

The plate B, legs A, and girt *r* constitute the frame-work of the machine.

Power is communicated by a belt to the pulley D on the shaft E.

D is a loose pulley with a clutch on the end of the hub. Motion is given to shaft E by means of clutch *a*, sliding on a key in the shaft E and working into a clutch on the end of the loose pulley.

F is a pinion on the shaft E, which meshes into gear-wheel G, attached to a pinion revolving in the box M, fastened to the frame A. G is connected by a crank-pin and connecting-rod R to the slide H, giving said slide H a reciprocating motion between the guides I I I I.

The clutch *a* is operated by means of the treadle *i*, keyed to one end of a shaft, *d*, working in brackets *t t*, the other end of the shaft *d* being keyed to an arm, *b*, which is attached to a collar on the clutch *a*.

n is a spring which lifts the treadle *i* (when released from the catch *g*) sufficiently to throw the clutch *a* into connection with the clutch on the end of the hub of pulley D, said treadle *i* having a hinge-joint in it to permit its release from the catch *g*. The clutch *a* is disconnected at the end of one of its revolutions by means of a rod, *h*, attached at its lower end to the treadle *i*, the upper end being kept in position by means of a cap, *s*, on the cross-bar *r*.

j is a latch pivoted to the end of the rod *h*. *m* is a stop on one side of *j*, and *l* is a spring on the other side to keep the latch in position. *s'* is a dog secured to the slide H, which as it moves in one direction swings the latch *j* enough to allow it to pass. On its return-stroke this dog comes in contact with this latch held by the stop *m* and depresses the treadle, throwing the clutch out of operation and stopping the machine.

On the top plate the guides I I I I are adjusted by screws O O.

J J in Fig. 1 are plates for carrying clamps for holding the piece to be bent, gages, and also rolls, as shown in Fig. 4, where plates Y Y, carrying rolls Z Z, are fastened to and pivoted to these plates.

W W are springs pivoted on pins Q Q, the other end pressing against plates Y Y, the tension being adjusted by screws K K.

For forming springs such as shown at *f'* in Fig. 5, the form *f* is bolted onto the slide H, as shown in Fig. 4. The blank is then placed as shown at *f''* in Fig. 4, and the machine is put in operation by pressing the treadle *i* with the foot. The form *f* then comes in contact with the blank, pressing it between the rolls Z Z, and returns to the position shown in the drawings, the rolls giving the spring the shape of the form *f*. In making such a spring as just described, the plates Y Y, upon which the rolls work, move on a pivot, so that the rolls bring the spring to the shape of the form at every point. This is done by means of the springs W W, pivoted at Q Q. In bending angles such as shown by No. 2 of Fig. 5 the small round blank is placed as shown at *z'* in Fig. 1, and is held in position by means of the clamp K and lever L. The roll *n'* is placed on the slide H in the position shown in Fig. 1. The machine, being then put in operation, makes one revolution, bending a right angle on the blank, and returns to the position shown in the drawings. The piece is then taken out and another inserted.

For making such a shape as shown by No. 1, Fig. 5, the clamp K and lever L are placed on the slide H and the rolls Z Z are placed upon the plates Y Y, the said plates being bolted rigidly. The clamp K in this case acts as a form for shaping the piece. The piece is then clamped by the lever L, and after being carried between the rolls by the slide H at the end of one revolution takes the shape as shown at No. 1, Fig. 5.

The slide H, together with any former roll or die which may be attached thereto to act as described, I term a "patrix," and any former die or roll, or combination of these, attached to the top plates, I I, or to the frame-work of the machine, which acts with the aforesaid patrix to bend or form any shape, I term a "matrix."

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

In a machine for forming springs and bending metal bars, the combination of a matrix, a reciprocating patrix, a revoluble shaft, a crank attached to said shaft, a pitman connecting said crank to said reciprocating patrix, and mechanism for starting the machine and arresting its motion at the completion of its stroke, consisting in a clutch which is engaged by the act of releasing a treadle or handle from a retaining-latch, and a rod by means of which the reciprocating patrix, at a definite position in its stroke, depresses the treadle or handle, so that it re-engages with the said latch, substantially as and for the purpose set forth.

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Witnesses:
CYRUS ELDER,
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EDGAR G. TUTTLE.