

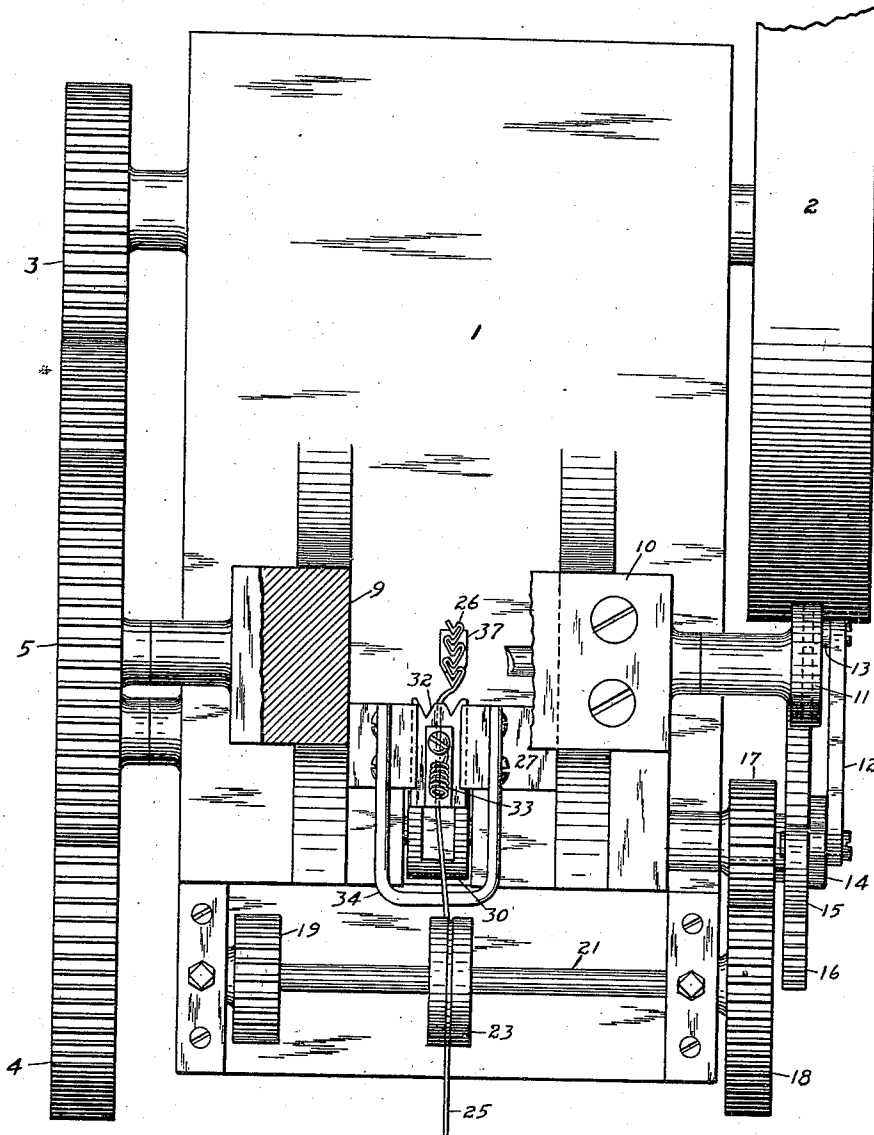
C. H. BURBANK.
WIRE BENDING MACHINE.
APPLICATION FILED NOV. 25, 1910.

1,002,218.

Patented Sept. 5, 1911.

4 SHEETS—SHEET 1.

Fig. 1



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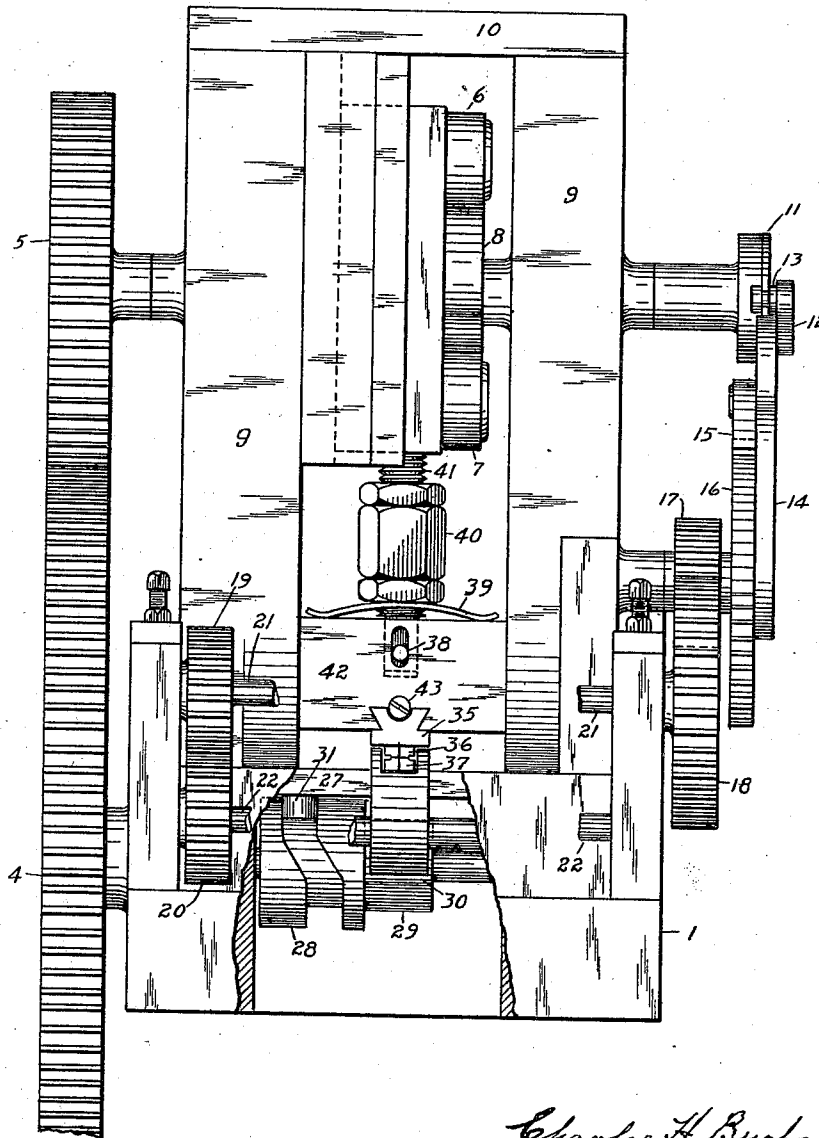
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Fig. 2



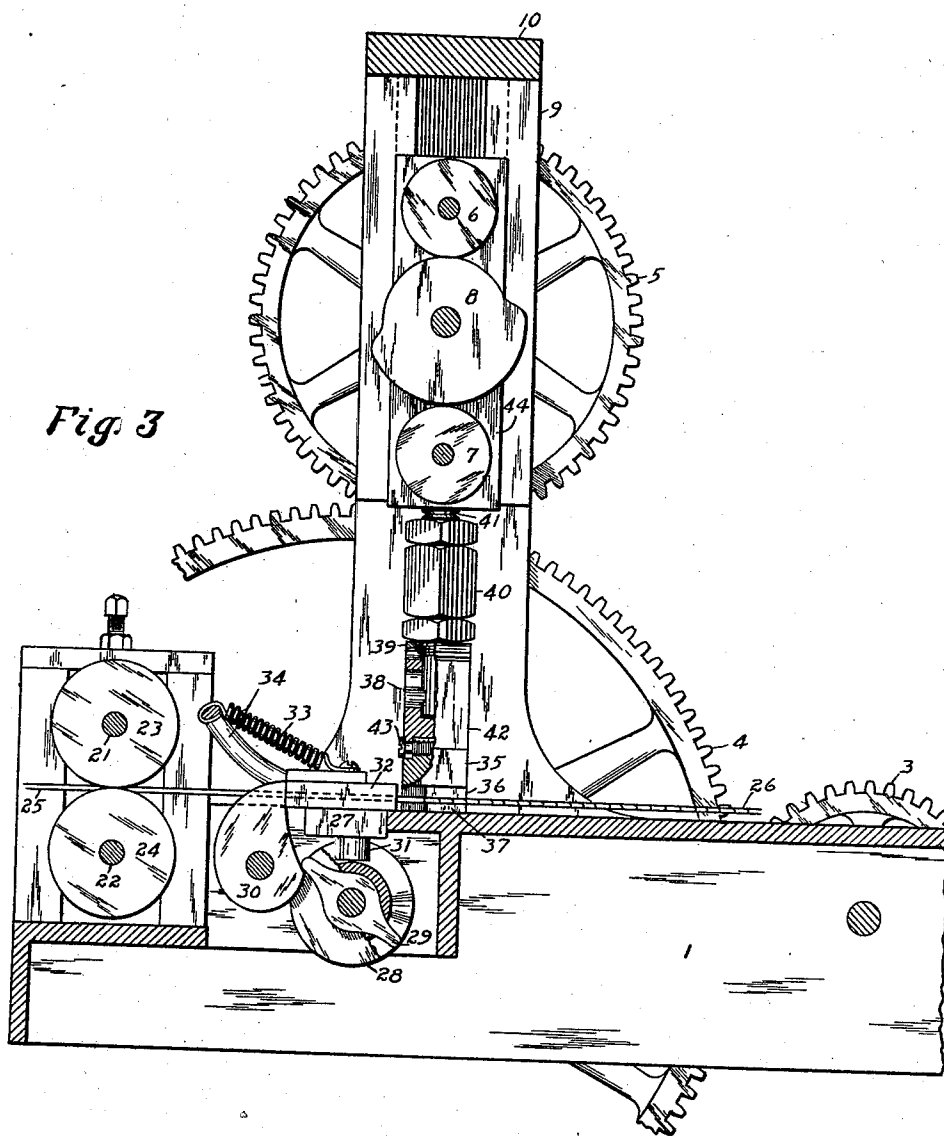
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4 SHEETS—SHEET 3.



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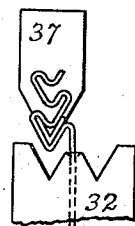
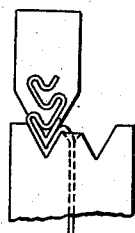
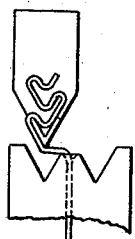
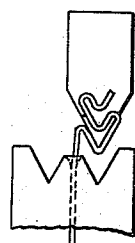
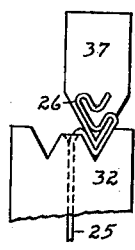
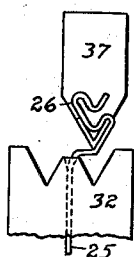
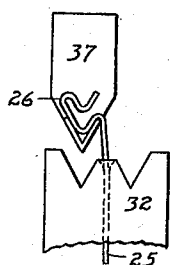
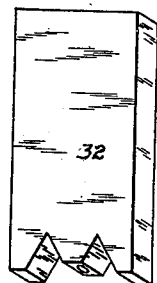
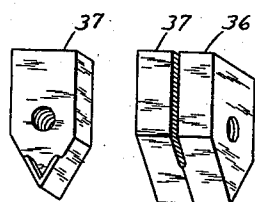
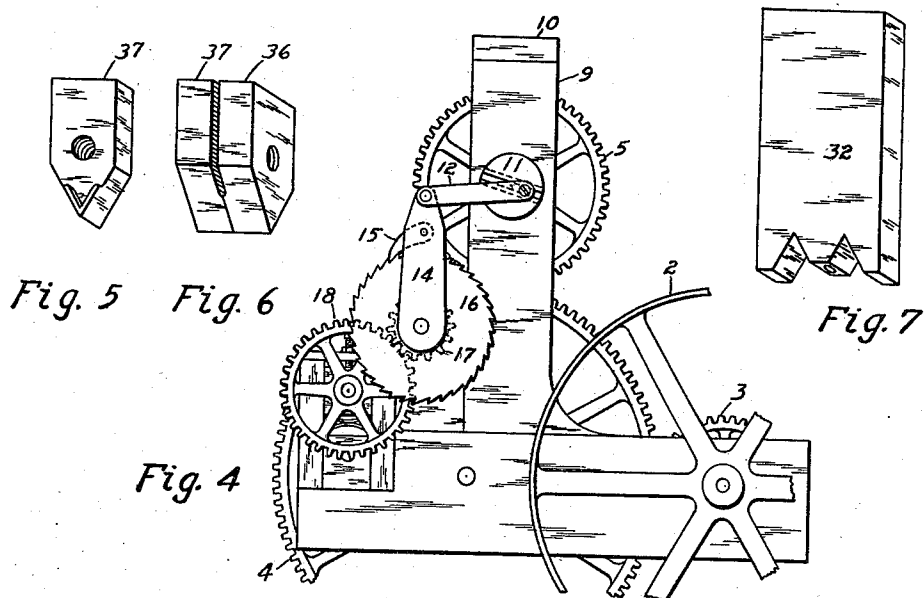
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

CHARLES H. BURBANK, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE BARCLEY CORSET COMPANY, OF NEWARK, NEW JERSEY, A CORPORATION.

WIRE-BENDING MACHINE.

1,002,218.

Specification of Letters Patent.

Patented Sept. 5, 1911.

Application filed November 25, 1910. Serial No. 594,111.

To all whom it may concern:

Be it known that I, CHARLES H. BURBANK, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented a new and useful Wire-Bending Machine, of which the following is a specification.

My invention relates to improvements in machines for bending elastic wire into flat progressive loops, in elongated curved or pointed form, in one direction, in the line of the longitudinal axis thereof; and comprises certain novel combinations of mechanical movements to attain this result.

Figure 1 is a plan of the machine, with the vertical portion thereof cut away. Fig. 2 is a front elevation of the machine, with the forward portion thereof cut away. Fig. 3 is a side elevation of the machine, cut to expose the operative parts thereof. Fig. 4 is a side view of the feed mechanism. Fig. 5 is a plan of one loop clamping die. Fig. 6 is a side view of the two loop clamping dies joined. Fig. 7 is a plan of the wire guide and loop forming die. Fig. 8 is a plan of the wire guide and die, in position of first loop formation. Figs. 9 to 15 inclusive, show the movements of dies, to produce alternate progressive loops.

Similar figures refer to similar parts throughout the several drawings.

The bed plate 1 sustains the various parts of the mechanism. The driving pulley 2 gives movement to the entire machine through the medium of gears 3, 4 and 5.

1 is an approximately rectangular bed, on which are supported driving pulley 2, and transmitting gears 3, 4, and 5, which connect with means for feeding wire from a coil intermittently into the machine; means for regulating the feed so as to increase or diminish the amount of wire fed, to meet the requirements of bending different sizes of loops; and means of gripping the wire between dies, and holding the same until formed in the dies by pressure. Mounted on bed 1, are vertical standards 9, held together by cross tie 10, and adapted to carry a vertically reciprocating cross head 42, which is actuated through the medium of rolls 6 and 7, and given reciprocation by means of cam 8. The mechanical movement required to intermittently feed the wire into the machine, comprises a slotted disk 11, having an adjustable pin 13, capable

of being set in the slot, at a proper point to give crank movement to pitman 12, which connects to lever 14, and actuates pawl 15, thus turning ratchet gear 16, transmitting movement to gears 17 and 18, thence to gears 19 and 20, which are mounted on shafts 21 and 22, carrying respectively the wire feed rollers 23 and 24, which rollers feed the wire 25 to the dies to form the product 26. The bed 1 carries a lateral slide 27, upon which is mounted a transverse slide, comprising a wire guide 32. The lateral slide is given motion by cam 28, through the medium of pin 31 and double cam 29 gives movement to pallet 30, which imparts transverse reciprocation to wire guide 32. Retractable motion is given to wire guide 32, by spring 33, held by bracket 34, and adjustment 35 is provided for clamping die 36, to bring it into juxtaposition to clamping die 37. The vertical cross head 42 is provided with a pin 38, which moves in a slot to compensate when the pressure on spring 39 produces the clamping action of dies 36, 37; the aforesaid pressure being regulated, by nut and lock nuts 40, upon screw 41. The die carrier 35 is dove-tailed into cross-head 42, and is provided with an adjusting screw 43, to move said die carrier longitudinally, to bring die 36 which is carried thereby, into juxtaposition with fixed die 37. The standard 9, carries a vertical slide 44, which is provided with rollers 6, 7, adapted to bear upon the surface of driving cam 8, to give motion to cross head 42. Having now enumerated the various parts of the machine, and shown their relative connection; it will be seen that the principal features of my invention are comprised as follows; the clamping die 37 is secured to bed 1, and is provided with means of longitudinal adjustment; and is made with a pattern in relief on the upper surface thereof, of the form of the loop desired, the said relief projecting less than one-half the diameter of the wire to be held and bent. A cross head 42 has means for imparting vertical reciprocation thereto, and is provided with adjustment to limit the traverse thereof, and has a spring 39 to cushion the pressure delivered; it carries clamping die 36, which is of similar form to die 37, and is set to face the same, and has means of adjustment of the relative position thereof to 37.

It is obvious that wire clamped between the faces of 36 and 37, by the movement of cross head 42, will be held without being crushed, on account of the relief afforded by spring 39; and will be controlled as to the pattern of loops by the design in relief on the faces of dies 36 and 37, when it is pressed against them by wire guide 32, which has a central perforation for the wire to pass through, and a recess of similar pattern to the relief design 36, 37, on each side of said perforation. The lateral reciprocation of die 32 brings the recesses thereof alternately in line with the dies 36, 37, and draws the wire across and between their respective faces; and the transverse reciprocation of die 32 upon slide 27, by means of double cam 29, and pallet 30, presses the wire into the dies and completes the loop formation, and the alternate reverse movement produces progressive loop formation consecutively.

The operation of the machine is as follows: The pulley 2 is connected by belting to a source of power, and the pin 13 set to the proper position in disk 11, to give the required movement to pitman 12 and lever 14, to move the pawl 15 and rotate the ratchet gear 16 and gears 17, 18, 19 and 20, and wire feed rolls 23, 24; the wire 25 is passed through wire guide 32, which also comprises a double die on the end thereof; the end of the wire 25, is then clamped between dies 36, 37, which are identical in form, and have a V-shaped relief pattern on the face thereof, the two relief patterns being equal to a little less than the diameter of the wire 25 to assure clamping action; thus the movement of cross-head 42 actuated by cam 8 at the proper time clamps the wire 25 and holds it until the wire guide 32 has pressed it against the dies 36, 37, to make it conform to the shape thereof; 32 then recedes, the clamping dies 36, 37 release, the wire 25 is fed in, 36, 37 again clamp 25, 32 is

moved laterally to its next position to form the alternate loop, and the operation proceeds consecutively as shown in Figs. 8 to 15 inclusive.

What I claim and desire to secure by Letters Patent of the United States is:

1. In a wire bending machine, the combination of an adjustable ratchet feed for the wire, and a vertically reciprocated cross-head carrying a clamping die, having on its face a pattern in relief of the shape of the loop to be produced, and adapted to cooperate with a similar but fixed die to clamp the wire and intermittently hold the same while being bent; with a guide, perforated for the wire to pass through, and having two recesses, one each side of the perforation corresponding in shape to the patterns in relief upon said dies; and adapted to be moved in relation thereto, to press the wire alternately between each recess and die, in progressive succession, to produce a wire stay; substantially as shown and set forth.

2. In a wire bending machine, comprising a vertical frame, and a horizontal bed plate; the combination of a cam actuated, vertically reciprocated cross head; means for adjustably cushioning the stroke thereof, and the dies 36, 37, one carried by cross head 42, and the other adjustably fixed upon bed 1, having a pattern in relief upon their faces of the form of the loop desired so that when said dies are in operation, they are separated by said relief patterns less than the diameter of the wire to be held thereby, thus enabling them to clamp the wire while the wire is being pressed and bent into form, substantially as specified and shown.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES H. BURBANK.

Witnesses:

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G. M. SARLES.