No. 626,183. Patented May 30, 1899.

J. M. MARTIN.

WIRE CRIMPING MACHINE.

(Application filed Oct. 10, 1898.)

(No Model.) 2 Sheets—Sheet 1.

FIG. 5.

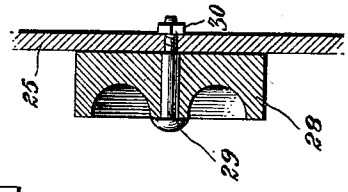


FIG. 4

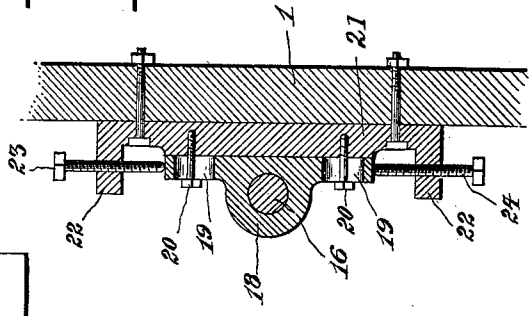
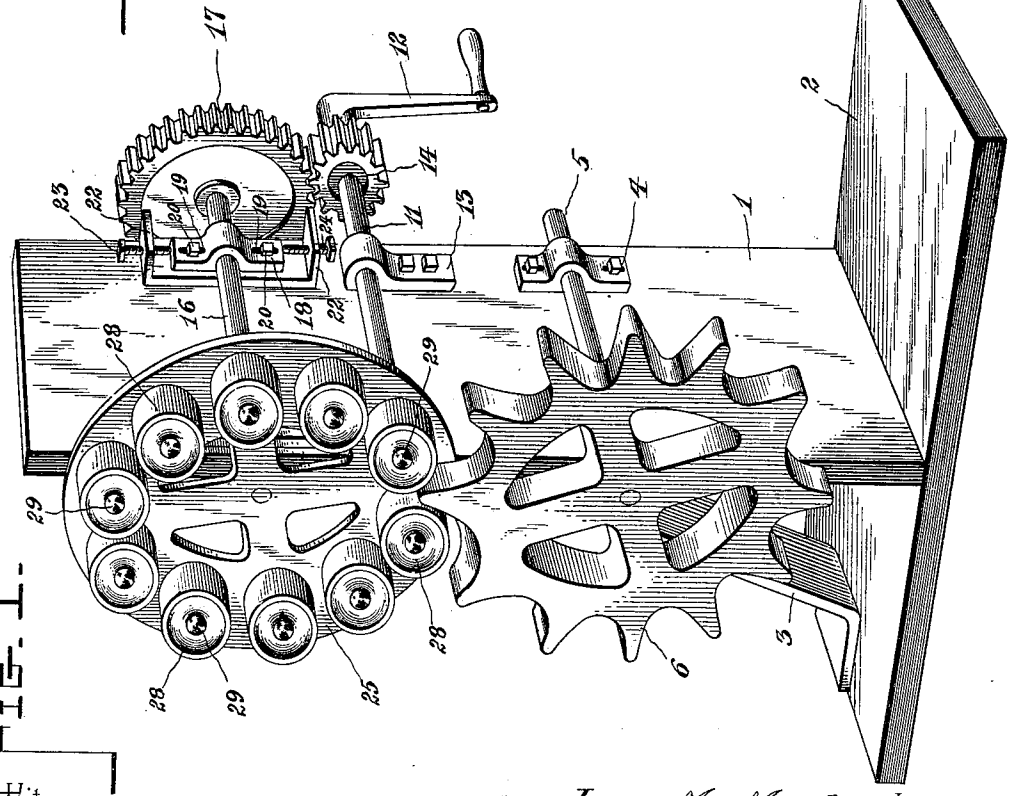


FIG. 6.



FIG. 1.



Witnesses

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FIG. 3.

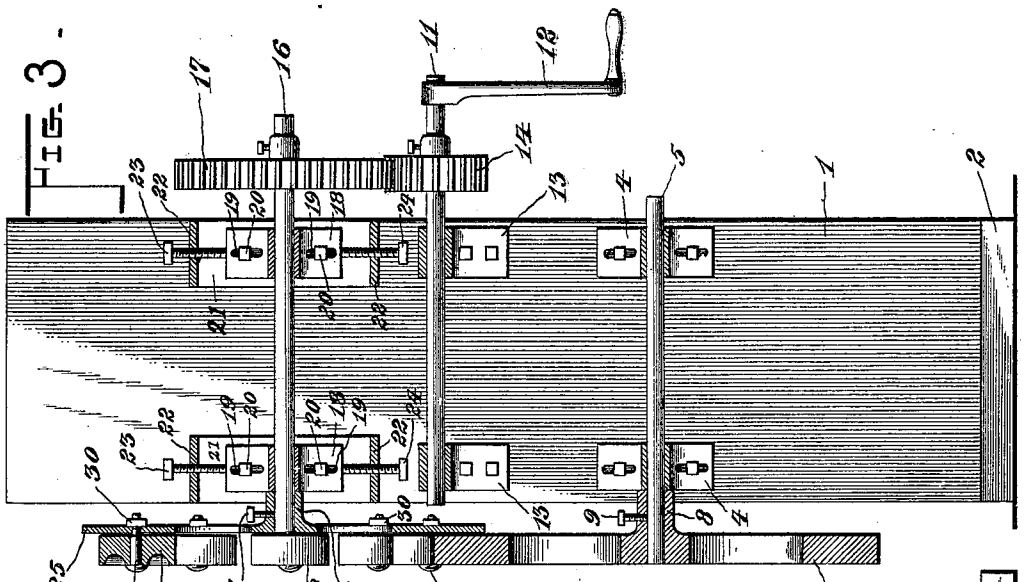
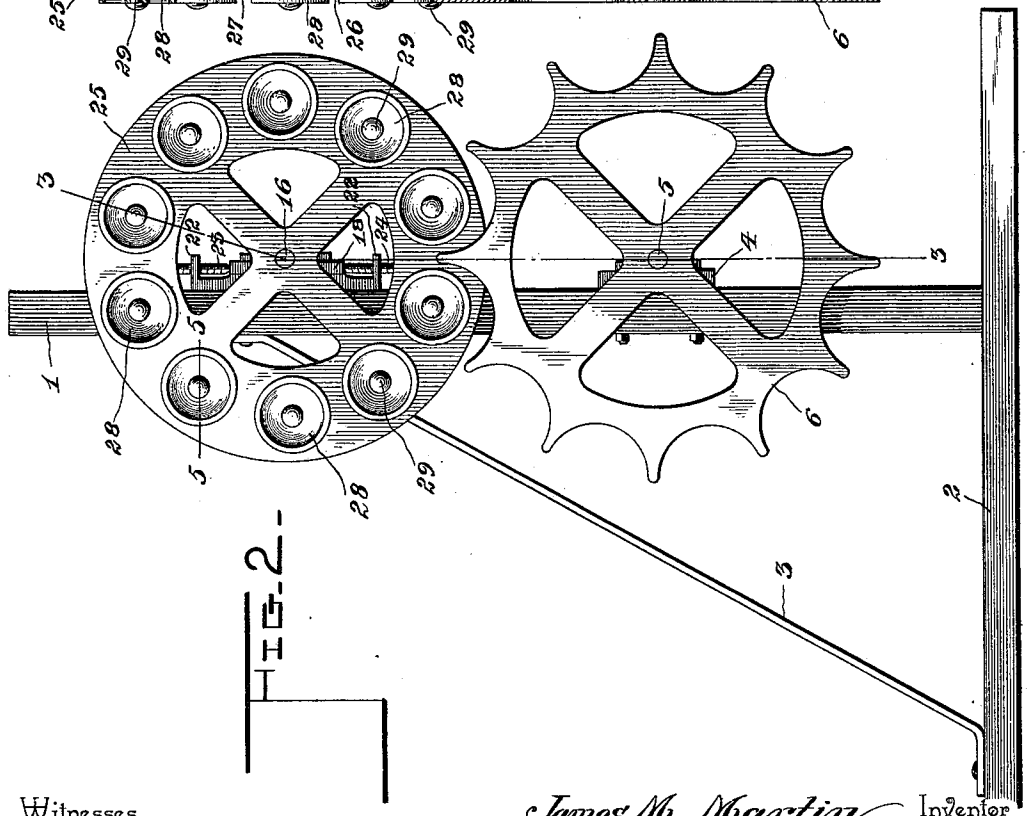


FIG. 2.



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UNITED STATES PATENT OFFICE.

JAMES MONROE MARTIN, OF KNOXVILLE, TENNESSEE.

WIRE-CRIMPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 626,183, dated May 30, 1899.

Application filed October 10, 1898. Serial No. 693,159. (No model.)

To all whom it may concern:

Be it known that I, JAMES MONROE MARTIN, a citizen of the United States, residing at Knoxville, in the county of Knox and State of Tennessee, have invented a new and useful Wire-Crimping Machine, of which the following is a specification.

My invention is a wire-crimping machine designed for the production of crimped wire suitable for the manufacture of bed-springs; and the object is to provide a simple structure adapted for easy operation and arranged to have the male and female dies coact to form a plurality of crimps or bends continuously in a wire or strand which is fed to the machine.

A further object is to provide means by which one die may be adjusted relatively to the other to vary the size of the crimps or bends in the wire and, furthermore, to mount the male-die rollers in a secure manner, so as to allow them free rotation on their axes and hold them in true relation to the sockets in the female die.

With these ends in view the invention consists in the novel combination of elements and in the construction and arrangement of parts, which will be hereinafter fully described and claimed.

To enable others to understand the invention, I have illustrated the same in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a perspective view of a wire-crimping machine constructed in accordance with my invention. Fig. 2 is a side elevation thereof. Fig. 3 is a vertical cross-section on the plane indicated by the dotted line 3 3 of Fig. 2. Fig. 4 is a vertical detail sectional view through one of the adjustable shaft-bearings for the rotatable male die. Fig. 5 is a detail sectional view on the plane indicated by the dotted line 5 5 of Fig. 2, showing the stud by which one male-die roller may be mounted on the revoluble carrier. Fig. 6 is a detail view in elevation of a piece of wire crimped by my machine.

Like numerals of reference denote like and corresponding parts in each of the several figures of the drawings.

The framework of my crimping-machine may be of any suitable construction, but is shown in the accompanying drawings as a standard or upright 1, erected on a suitable base 2 and stayed in place by an inclined brace 3, which is bolted or otherwise secured to the upright and the base, respectively. This standard carries a pair of alined shaft-bearings 4, which are adjustably bolted to said standard, and in these bearings is journaled the horizontal shaft 5, which carries the female die. This die occupies a vertical position at one side of the standard, and it is mounted on one end of the shaft 5 to turn therewith under the motion of the rollers on the male die. The female die is in the form of an annulus or rim 6, having a series of radial arms joined to a hub 8, which is fitted on the shaft 5 and clamped firmly thereto by the binding-screw 9.

Above the shaft of the female die is arranged a power-shaft 11, which is parallel to the shaft 5 and is provided at one end with a suitable operating-crank 12. This power-shaft is journaled in the horizontally-alined bearings 13, suitably secured to the upright 1, and said shaft has a gear-pinion 14, adapted to mesh with a gear-wheel on the shaft of the positively-driven male die.

The male-die shaft 16 has the gear 17, which meshes with the before-described pinion 14 to transmit the motion of the power-shaft to the male-die shaft, and said shaft 16 is journaled in vertically-adjustable bearings 18, which are mounted to be sustained firmly in position on the upright and to lie parallel to the shafts 5 11. The adjustable bearings 18 are provided with slots 19, which accommodate the fastening-bolts 20, and said bearings 18 are fitted to metallic bed-plates 21, that are suitably secured to the upright 1. Each bed-plate is provided with the flanges 22 at its ends, and said flanges have threaded openings which receive the adjusting-screws 23 24, which may be rotated in opposite directions to provide for the vertical adjustment of the bearing. These adjusting-screws on the two shaft-bearings secure a nicety of adjustment for the shaft 16 of the male die, and said bearings are held firmly in place by said adjusting-screws and by the bolts 20, which are fastened to the bed-plates.

The male die of my machine is arranged in

a vertical position immediately over and in line with the female die 6, and this male die is equipped with an annular series of freely-revoluble die-rollers which correspond in number to the sockets of the female die and are arranged to register therewith. The male die has a carrier disk or ring 25, having a hub 26, which is fitted on the shaft 16 and is secured firmly thereto by the binding-screw 27. This revoluble disk of the male die carries a series of crimping-rollers 28, which are spaced apart a suitable distance to allow sufficient clearance between the rolls for the reception of the prongs which are produced on the female die by the formation of the sockets therein, and each of these rolls 28 is mounted idly on the disk 25 by a headed journal-screw 29. The shank of the journal-screw passes through the disk 25 and is threaded to receive a suitable nut 30, or said stud 29 may be screwed into a threaded aperture in the disk. The journal stud or screw 29 is reduced to form a shoulder adapted to bear against the disk 25, and the crimping-roller 28 is mounted to rotate freely on the stud between the head thereof and the face of the disk.

In assembling the parts of my machine the coacting dies are mounted on their shafts to insure registration of the male-die rollers with the sockets in the female die, and the extent to which the rollers enter the sockets may be regulated by the adjustment of the bearings 18 for the shaft 16, which carries the male die.

In the operation of the machine a length or strand of wire is passed between the adjacent edges of the coacting dies, and the power-shaft 11 is rotated to impart motion to the male die, which through its rollers serves to impel the female die in unison with the rotation of the male die. The wire is crimped by the action of the rollers on the male die forcing or bending the wire at regular intervals into the sockets of the female die, and as these dies rotate in unison the wire is fed between the dies during the rotation thereof, so that the dies serve to bend or crimp the wire and also feed the same through the machine. The product of my machine is represented by Fig. 6, by an inspection of which it will be seen that the bends or crimps are produced uniformly in the wire or strand and with short curved sections between the crimps and which are due to the rounded extremities of the prongs on the female die.

Changes may be made in the form of some of the parts while their essential features are retained and the spirit of the invention embodied. Hence I do not desire to be limited to the precise form of all the parts as shown, reserving the right to vary therefrom.

Having thus described the invention, what I claim is—

1. In a wire-crimping machine, coacting revoluble male and female dies arranged in the same plane, the male die carrying a series of rollers arranged to secure registration with sockets of the female die, for the purpose described, substantially as set forth.

2. In a wire-crimping machine, the combination of an idly-journaled female die, and a positively-driven male die arranged in the same plane with the female die and carrying a series of crimping-rolls spaced thereon to insure registration with sockets of the female die, substantially as described.

3. In a wire-crimping machine, the combination of a female die having in its periphery a series of pockets, a male die carrying a series of idly-journaled rollers which register with the pockets of the female die, shafts on which the two dies are respectively mounted, and means for positively rotating the male-die shaft, substantially as described.

4. In a wire-crimping machine, coacting male and female dies arranged to register, and a series of rollers mounted on the male die to enter the pockets of the female die, in combination with means for rotating said dies, and means for adjusting one die relatively to the other die, substantially as described.

5. In a wire-crimping machine, the combination of an idle shaft carrying a female die, adjustable bearings carrying another shaft, a male die mounted on the last-named shaft and provided with a series of crimping-rolls which register with pockets in the female die, and a power-shaft geared to the male-die shaft, substantially as described.

6. In a wire-crimping machine, a male die consisting of a revoluble carrier, crimping-rolls arranged in annular series on said carrier, and journal-studs attached to the carrier and having the crimping-rolls mounted loosely thereon, in combination with a positively-driven shaft to which the male-die carrier is secured, and an idle female die lying in the plane of the male-die rolls and having a series of pockets which register with said rolls, substantially as described.

7. In a wire-crimping machine, the combination with a frame, of the bed-plates carrying the adjusting-screws and having the adjustable shaft-bearings fastened thereto between said adjusting-screws, a shaft journaled in said bearings to be adjustable therewith, a male die carried by said shaft and provided with an annular series of crimping-rolls, a power-shaft geared to the male-die shaft, another shaft journaled on the frame, and a female die carried by the last-named shaft and arranged in the plane of the series of die-rolls for the pockets of said female die to register with the rolls of the male die, substantially as described.

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

JAMES MONROE MARTIN.

Witnesses:
J. A. ECKEL,
J. S. RAYL.