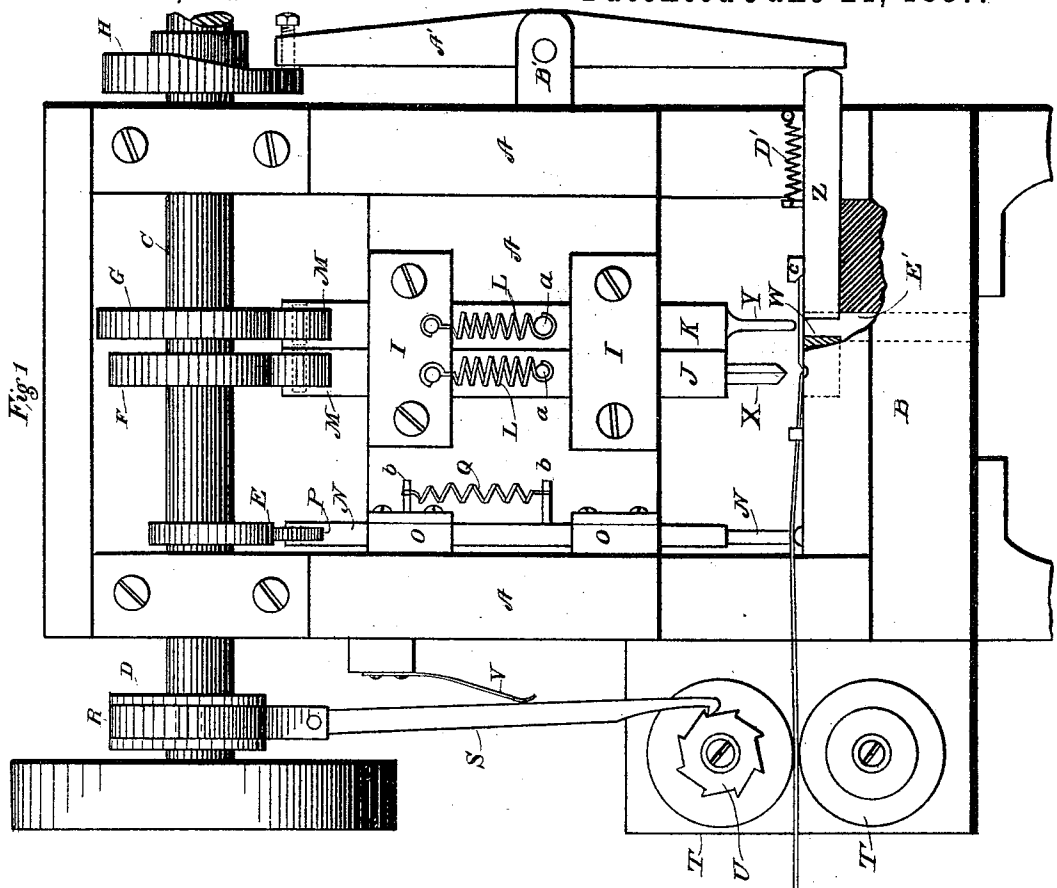
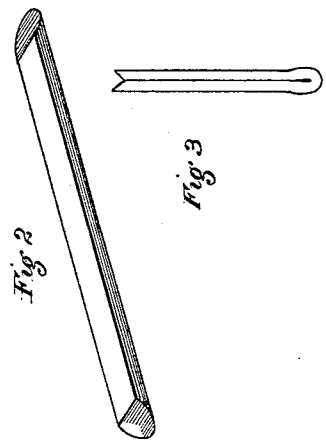
(No Model.)

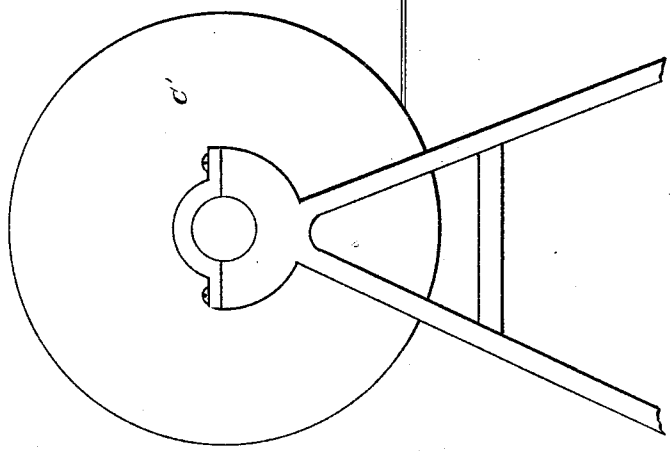
G. DOOLITTLE.

MACHINE FOR AND METHOD OF MAKING DOUBLE POINTED WIRE NAILS.

No. 365,121. Patented June 21, 1887.







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UNITED STATES PATENT OFFICE.

GEORGE DOOLITTLE, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR OF ONE-HALF TO THOMAS B. DOOLITTLE, OF SAME PLACE.

MACHINE FOR AND METHOD OF MAKING DOUBLE-POINTED WIRE NAILS.

SPECIFICATION forming part of Letters Patent No. 365,121, dated June 21, 1887.

Application filed January 26, 1887. Serial No. 225,511. (No model.)

To all whom it may concern:

Be it known that I, GEORGE DOOLITTLE, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Machines for and Method of Making Double-Pointed Wire Nails or Staples; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain novel and useful improvements in machines for and the method of making double-pointed nails, and has for its object to greatly cheapen and facilitate the production of said articles; and with these ends in view my invention consists in certain details of construction and combination of elements, hereinafter fully set forth, and then specifically designated by the claims.

In order that those skilled in the art to which my invention appertains may fully understand its construction and operation, I will proceed to describe the same in detail, referring by letter to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a front elevation of my machine; Fig. 2, a perspective on an enlarged scale, showing the blank for the nail after it has been cut and prior to the bending, and Fig. 3 an elevation of the completed article formed from said blank.

Similar letters denote like parts in the several figures of the drawings.

A is the frame of the machine, and B the bed.

C is a shaft journaled in the top of the frame, and having mounted thereon cams D E F G H.

I are boxes secured to the frame, and within these are the cutter-bar J and punch-bar K, so arranged as to be capable of a vertical reciprocation within said boxes.

L are coil-springs secured at one extremity to the upper box, I, the other ends being fastened to pins *a* projecting from the cutter and punch bars.

M are friction-rolls journaled in the upper ends of the bars J K, and against which rolls the cams E G impinge to depress said bars, for the purpose presently explained.

N is a presser-bar mounted within boxes O, secured to the frame; and P is a friction-roll journaled at the top of said bar, against which roll the cam E impinges.

Q is a coil-spring secured at its extremities to pins *b*, projecting from the upper box, O, and the presser-bar, respectively, for the purpose presently explained.

R is a yoke which embraces the cam D, and at the bottom of said yoke is pivoted a pawl, S.

T are feed-rolls journaled within a box secured to or formed integral with the frame and arranged one directly above the other. The upper roll has a ratchet, U, secured thereto, with which the pawl S is adapted to engage. V is an ordinary bow-spring secured to the frame of the machine and bearing against the inner edge of said pawl. It will thus be obvious that the revolution of the cam D will effect a vertical reciprocation of the pawl S, and thereby cause the latter to engage with the teeth of the ratchet and revolve the feed-rolls intermittently.

W is a die-plate set in the bed of the machine directly below the cutter-bar.

X is the cutter, and Y the punch, both secured in any ordinary way within their respective bars.

Z is a die mounted within bearings in the bed-plate so as to have a free longitudinally-sliding movement therein, and having secured to or formed integral with its upper face a stop, *c*.

A′ is a lever pivoted within a yoke, B′, projecting from the frame of the machine.

The cam H is a face-cam, and the lower extremity of the lever A′ abuts against the die Z, while the upper extremity is within the field of operation of said cam, so that it will be readily understood that when said cam strikes said lever the die Z will thereby be forced inward.

In the manufacture of nails I preferably use half-round wire, which is fed between the rolls T from the reel C′.

The operation of my improvement is as follows: The feed-rolls are operated by the action

of the pawl S on the ratchet U, and the wire is thereby fed between the feed-rolls against the stop *c*. The cutter now descends and severs the wire at an angle of about forty-five degrees, the presser-bar N and the punch Y being both superimposed upon the wire by the action of their respective cams during the operation of cutting to prevent the displacement of the wire, but at the same time not interfering with the thrust of the wire during said cutting. The cutter is now retracted by its spring L, while simultaneously therewith the cam H leaves the lever A′ and thereby permits the die Z to be withdrawn by the action of a coil-spring, D′, secured at its extremities to the frame of the machine and to said die, whereby the stop *c* is withdrawn from abutment with the wire. The punch Y is now propelled by the action of the cam G, thereby bending the severed wire and forcing it between the dies W Z. The punch is now retracted by the action of its spring L, and immediately thereafter the cam H thrusts the upper extremity of the lever A′ outward, thereby forcing the die Z inward, which causes the wire, bent as aforesaid, to be firmly compressed between the dies W Z. The cam H now leaves the lever, and the die Z is withdrawn to its normal position by the action of the spring D′. Simultaneously with the operation of the cam H against the lever A′ the cam E leaves the roll P and permits the presser-bar A to be elevated by the spring Q, in order to allow of the further feeding of the wire by the subsequent action of the pawl S on the ratchet U. Of course it will be readily understood from the foregoing description that the individual functions of the cams are all so regulated that the feeding, clamping, cutting, punching, and compressing of the wire will be performed each at a predetermined time. The wire, after it has been compressed between the dies, drops through an opening, E′, in the bed into any suitable receptacle.

Prior to my invention great difficulty has been experienced in manufacturing double-pointed nails, owing to the lack of proper cutting mechanism, as well as to the fact that the various operations have never as yet been so regulated that they could be performed in a single machine. It will be observed that I sever the wire by a dead blow from a blunt cutter, and that there is no waste of material whatever, and to this fact more than any other do I attribute the production of the nails aforesaid automatically by a single machine.

I am aware that split or bent keys have been made by feeding a half-round wire under a cutter and then bending the severed blank around a bolt or pin in order to form an eye or loop, and I do not wish to be understood as laying claim to any such construction.

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

1. In a machine for making double-pointed wire nails, the combination, with means, as a pair of rolls, for feeding the wire, of a V-shaped cutter adapted to sever the wire on a bevel, a punch for partially bending the severed wire, whereby the beveled ends incline outward from each other, and a pair of dies adapted to compress together the two sides of the partially-bent wire throughout their entire length, substantially as shown and set forth.

2. The method herein described of making double-pointed wire nails, the same consisting in feeding the wire, severing the same on a bevel, then partially bending the wire so that the beveled ends incline outward from each other, and finally firmly compressing together the two sides of the partially-bent wire throughout their entire length, substantially as shown, and herein specified.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE DOOLITTLE.

Witnesses:
T. W. SMITH, Jr.,
S. S. WILLIAMSON.