

(No Model.)

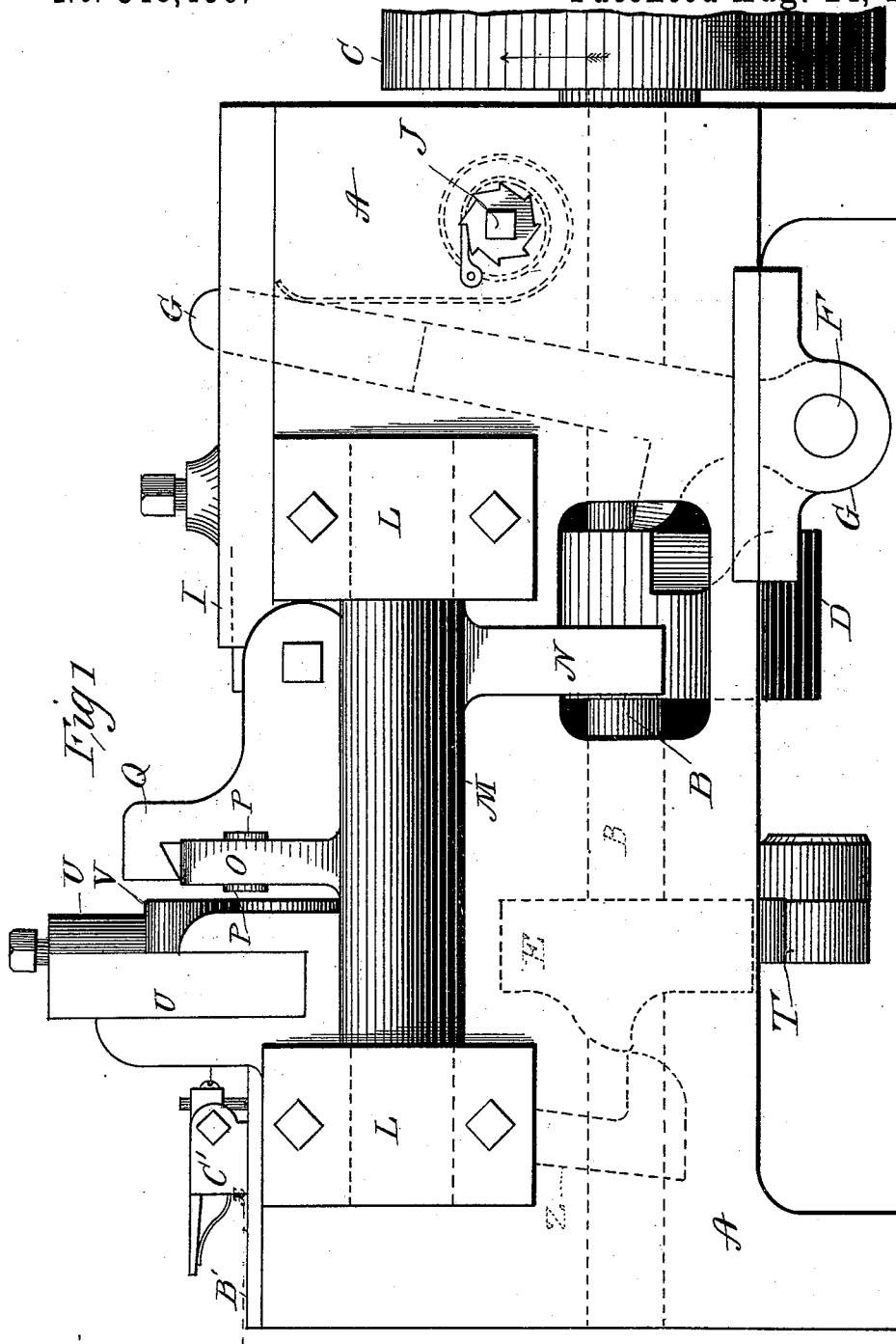
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D. EVANS.

WIRE NAIL MACHINE.

No. 348,156.

Patented Aug. 24, 1886.



Witnesses

S. Williamson

Julian H. Sterling

Inventor

David Evans
Mitt and Hubbard

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(No Model.)

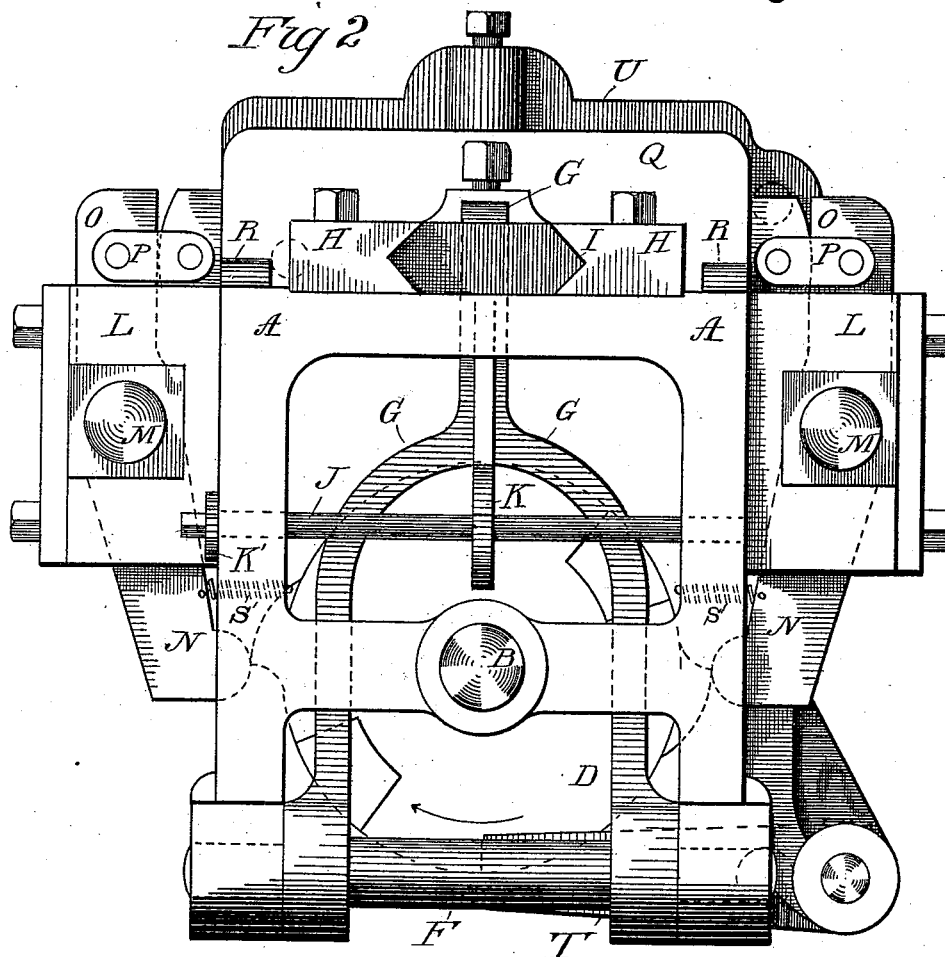
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By *Smith & Hubbard*

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(No Model.)

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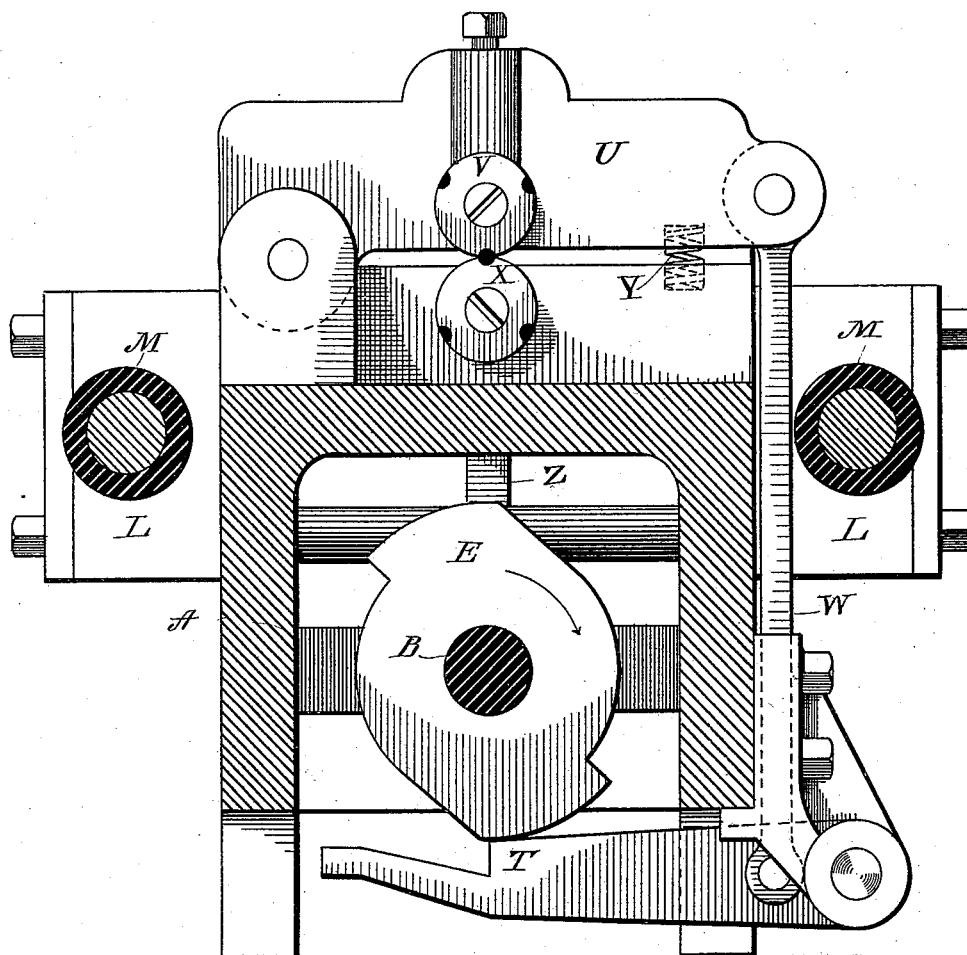
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Fig 3



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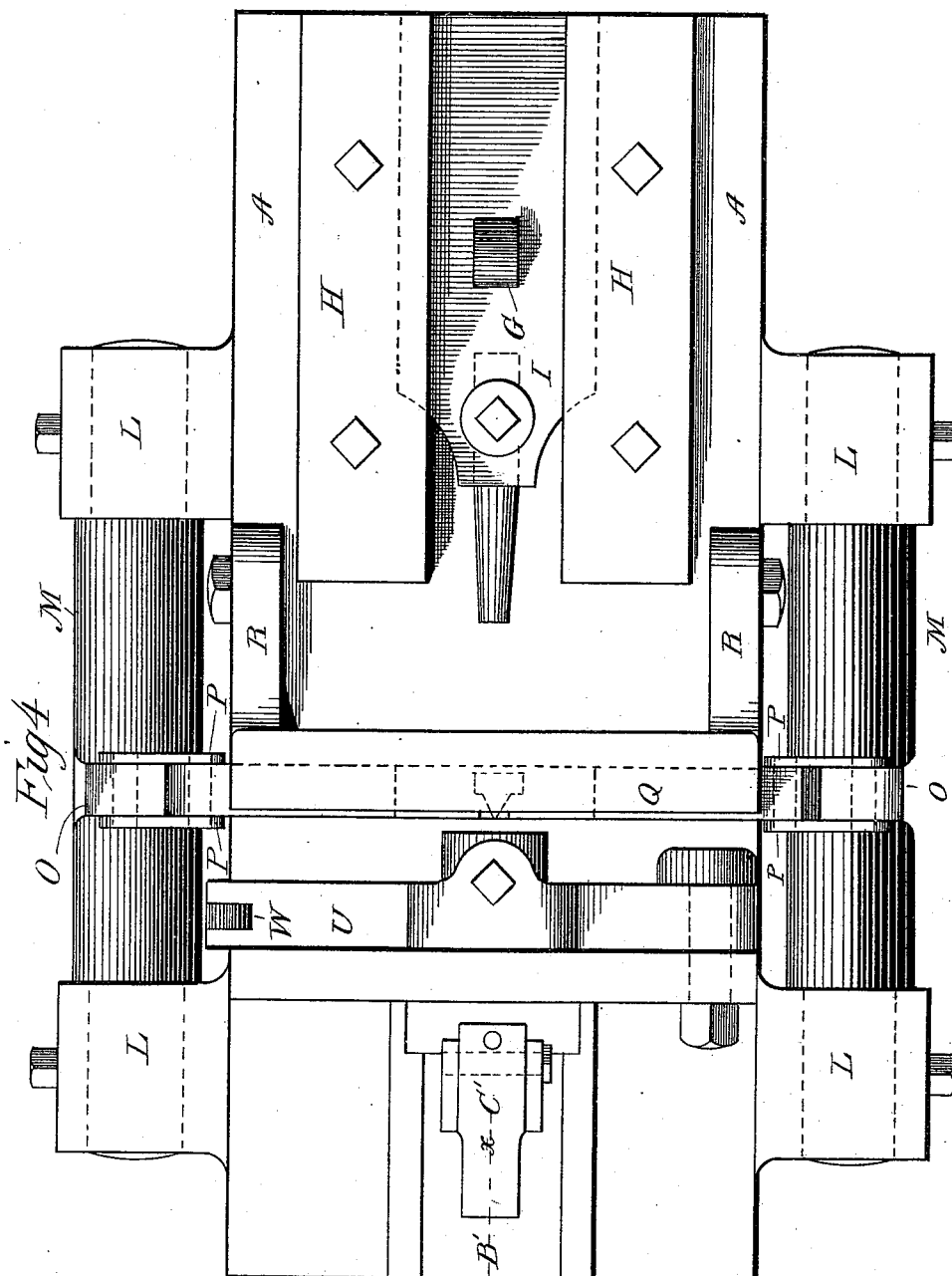
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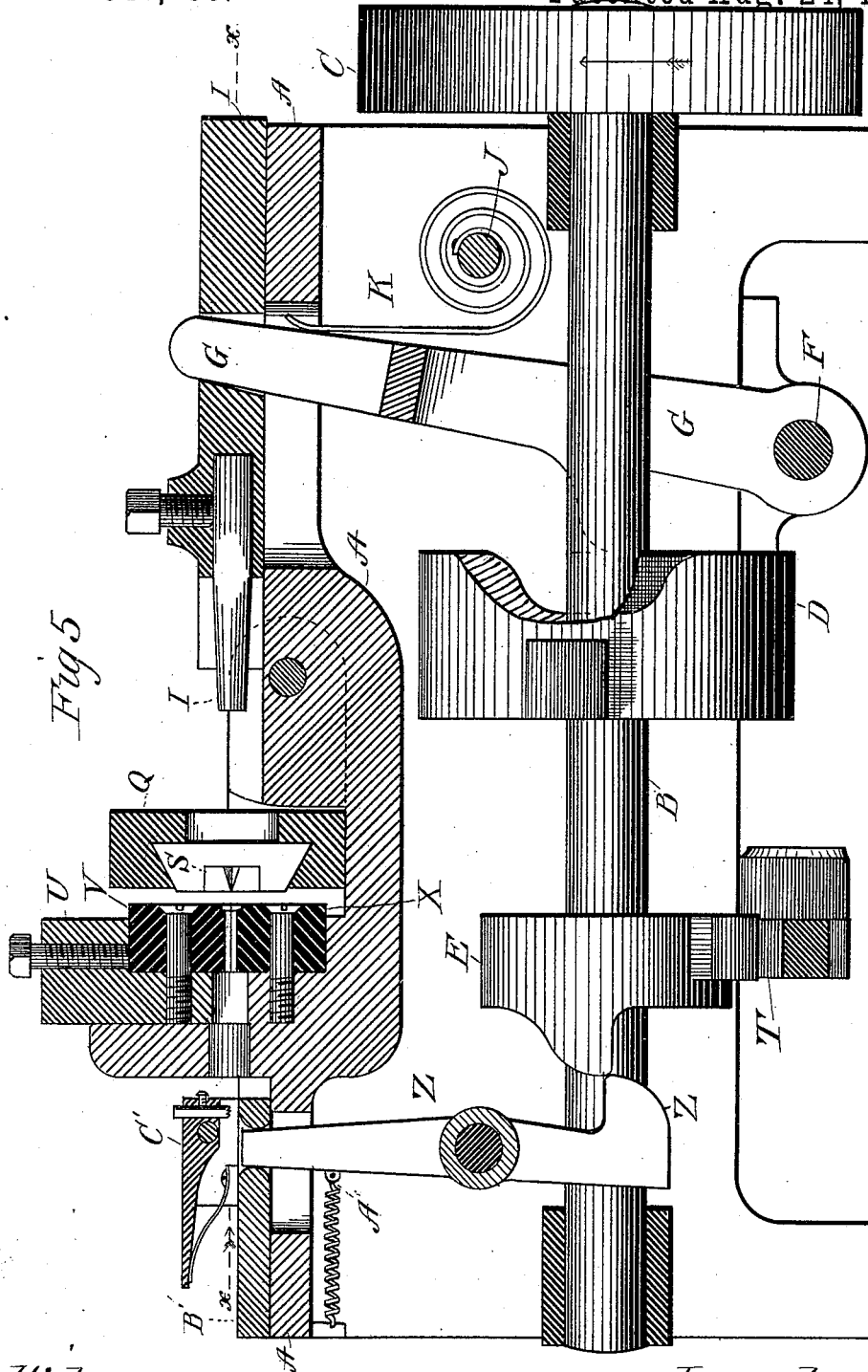
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UNITED STATES PATENT OFFICE.

DAVID EVANS, OF ANSONIA, CONNECTICUT.

WIRE-NAIL MACHINE.

SPECIFICATION forming part of Letters Patent No. 348,156, dated August 24, 1886.

Application filed May 14, 1886. Serial No. 202,143. (No model.)

To all whom it may concern:

Be it known that I, DAVID EVANS, a citizen of the United States, residing at Ansonia, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Wire-Nail Machines; 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 making wire nails, and has for its object to furnish a machine of exceedingly simple and compact construction, which shall be composed of few and strong parts, and in which the strain incident to operation shall be distributed throughout the construction, and which, furthermore, shall be positive and rapid in its operation; and with these ends in view my invention consists in the details of construction and combination of elements hereinafter fully explained, 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 describe the same in detail, referring by letter to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a side elevation of my machine; Fig. 2, an end elevation from the right hand of Fig. 1; Fig. 3, a cross section showing the grasping-dies and the means whereby they are operated; Fig. 4, a plan view, and Fig. 5 a central longitudinal vertical section.

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

A is the frame of my machine. To this frame are secured the operative parts.

B is the main shaft, which is held in bearings in the ends of the frame, and which extends longitudinally and centrally beneath the bed of the machine.

C is a pulley rigidly mounted upon the end of the shaft, and whereby motion is imparted thereto.

D is a cam secured on and turning with the main shaft. Its face contour (see Figs. 1 and 5) actuates the heading mechanism in one direction, as will hereinafter more fully appear, and its peripheral contour imparts the proper

movement to the pointing and cutting-off dies, as will presently be explained.

E is a second cam on the main shaft, having both peripheral and face operating-surfaces. By means of the former the gripping-dies are actuated. By the latter the feeding of the wire is accomplished, as will hereinafter be described.

F is a transverse rock-shaft journaled in the bottom of the frame, and G is the hammer-lever secured upon the rock-shaft, and forked, for the twofold purpose of avoiding the main shaft and for the proper action of the face-cam thereon.

In suitable guideways, H, secured upon the top of the frame of the machine, is held and adapted to reciprocate the hammer I, through which projects the upper end of the hammer-lever, as may be seen by reference to Figs. 1, 2, 4, and 5.

Upon a transverse shaft, J, secured in the frame, is wound a spiral spring, K, whose free end bears against the hammer-lever, (see Fig. 1,) and actuates the latter in its forward movement. By the key and ratchet K' the tension of the spring, and consequently the force of the hammer-blow, can be varied, if desired.

L indicates a pair of outwardly-projecting bearings secured upon each side of the machine, and in these are journaled the rock-shafts M, through which the pointing and cutting-off dies are actuated. (See Figs. 1, 3, and 4.)

N are rigid downward projections from the rock-shafts, which engage with and are moved outwardly by the periphery of cam D. (See Figs. 1 and 2.) O are arms projecting upward from said rock-shafts and rigid thereon. The arms O are connected to the dies which point and cut off the nail by pivoted links P.

Q is a bearing in which the dies are reciprocated. For convenience of their removal it is hinged to the frame through backward projections R, as may be seen at Fig. 4. The pointing and cutting-off dies S are reciprocated in their bearings from the rock-shafts M, through the medium of the links and upwardly-projecting arms above described. Springs S', acting on projections N, effect the backward movement of the dies.

The grasping and holding of the wire while the processes of pointing and heading are per-

formed are effected as follows: A lever, T, is pivoted to an outward projection from the frame. Its free end engages with and is operated by the peripheral contour of cam E.

5 U is the die-bar, hinged at one end to the frame. It contains the upper grasping-die, V, and its free end is connected to the lever T by a long link, W.

X is the lower grasping-die, set in a transverse extension from the frame. The closing of the grasping-dies is effected against the action of a spring, Y, set between the frame-extension and the upper die-bar.

The feeding mechanism of my machine receives its movement from the face contour of cam E, acting upon a pivoted lever, Z, against the resilience of a spring, A'. The upper extremity of the lever Z is thereby caused to oscillate backward and forward. It projects within and actuates a traveling carrier, B, causing the latter to reciprocate longitudinally of the machine, in the same manner as the hammer is actuated.

C is an eccentric carrying a serrated jaw, spring-upheld as to its rear end, and between the upper face of the carrier and the jaw of the eccentric the wire passes to the dies. As the carrier is moved backward by the lever, the jaw slips upon the surface of the wire which is at that time held in the grasping-dies. As the carrier is moved forward, the jaw binds the wire tightly between it and the carrier and pulls it forward the length of one nail.

35 The line *xx* shows the line of the feed, and the small arrows thereon its direction.

With the operative parts combined as above set forth, my machine is adapted to operate as follows: There are two cam-surfaces, both 40 peripheral and face, upon cam D, so that both the downward projections from the rock-shafts will be moved outward twice in each revolution, and so that the hammer-lever may be moved backward against the action of its spring twice in each revolution. By the two 45 cam-surfaces—peripheral and face—upon the cam E the gripping and feeding mechanisms are caused to act twice at each revolution, and in proper time relative to the movements of the devices which point and head the nail. The wire is fed from a reel or coil, through suitable straightening-rolls or their equivalent, to the feeding mechanism shown at the left hand of Fig. 1, thence between the grasping-dies to be headed, and, lastly, is pointed 55 and severed by the dies provided for that purpose.

To describe the successive operations of the machine in their regular order: The end of the wire projects slightly through and is tightly held between the grasping-dies V X. While thus held, the hammer-lever, carrying with it the hammer, is rocked backward against its spring by the cam, and then released. The action of the spring impels it 15 forward, and the nose of the hammer properly

upsets the extremity of the wire against the outer surfaces of the grasping-dies to form the head of the nail. The peripheral cam now releases its hold upon the grasping-dies, 70 and they then hold upon the wire. The feed-lever is operated by its cam, and the headed wire is moved forward one step by the carrier. The grasping-dies then seize the wire again, and the cutting and pointing dies, operated by the periphery of cam D through 75 the downward projections, rock-shafts, arms, and links, are caused to close and cut off the wire, as well as form a properly-shaped point upon the nail. The grasping-dies retain their 80 hold upon the wire till after the next operation of the header.

The cams are so shaped and timed that the successive operations hereinbefore described are performed in their regular rotation and in 85 proper time.

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

1. The combination, in a machine of the character described, of the main shaft extended longitudinally of the machine and beneath its bed, the cam D, having both peripheral and face eccentricity, mounted thereon, the pointing-dies and the rocking spring-actuated hammer operated by said cam, the peripheral and face cam E on the main shaft, and the grasping and feeding mechanisms operated by the same, all arranged as described, and for the purpose specified. 100

2. The combination of the cam on the main shaft having both peripheral and face eccentricity, the backwardly-rocking and spring-actuated hammer-lever and the hammer carried thereby, the longitudinal rock-shafts having upwardly-extending arms and downward projections, actuated by the peripheral outline of the cam, and the cutting and pointing dies held in bearings, wherein they are reciprocated by the rock-shafts and their arms, substantially 105 as set forth.

3. The combination, with the main shaft and the two doubly-eccentric cams mounted thereon, of the backwardly-rocking and spring-impelled hammer-lever and the hammer carried thereby, the longitudinal rock-shafts having downward projections, actuated by the cam, and upwardly-extending arms, whereby motion is imparted to the pointing-dies, the transversely-reciprocating dies, the hinged 115 die-bar, the grasping-dies, and the link-and-cam-actuated lever, whereby they are operated, and the cam-actuated and longitudinally-reciprocating carrier, whereby the feeding of the wire is accomplished, substantially as 120 specified.

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

DAVID EVANS.

Witnesses:

S. H. HUBBARD,

S. S. WILLIAMSON.