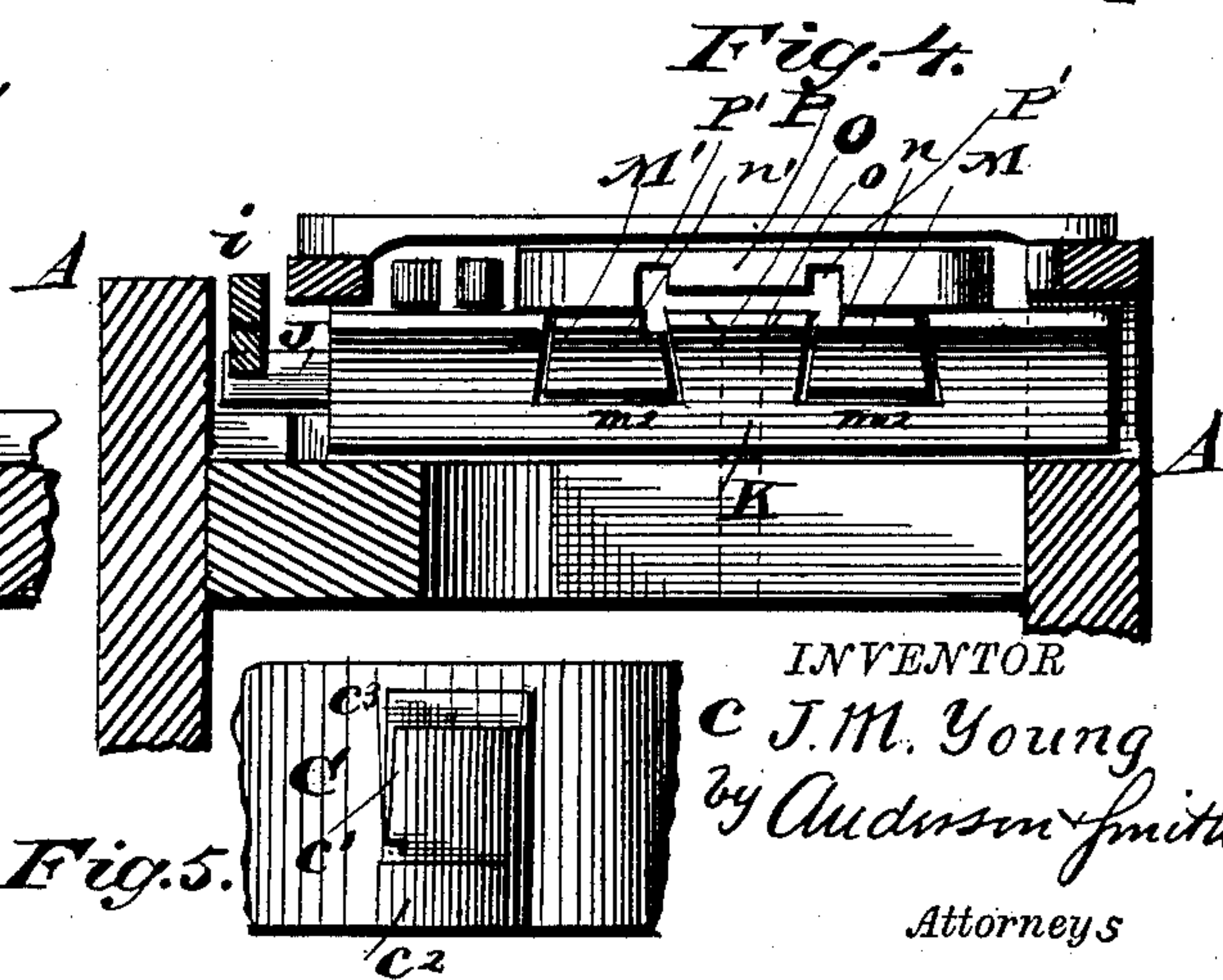
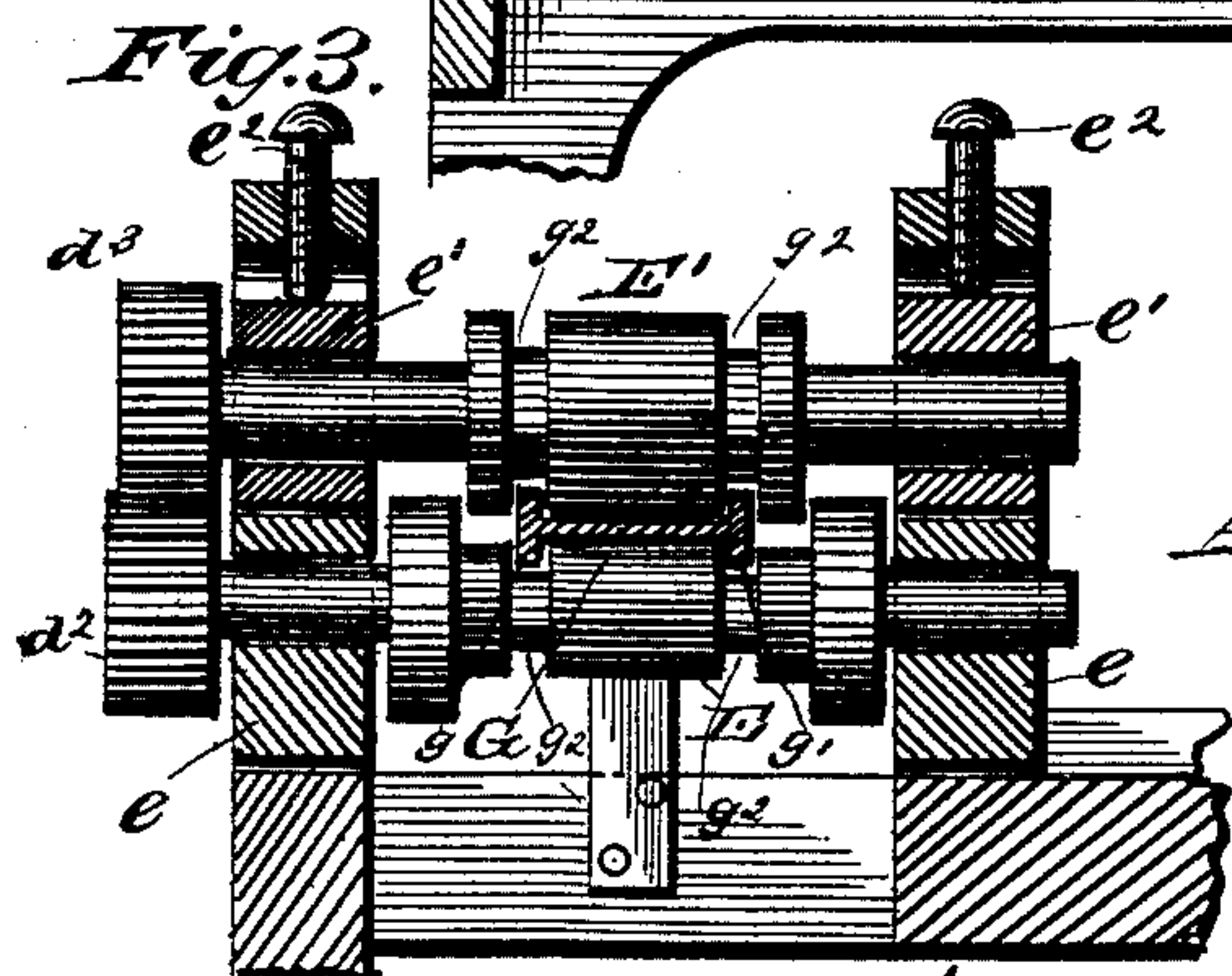
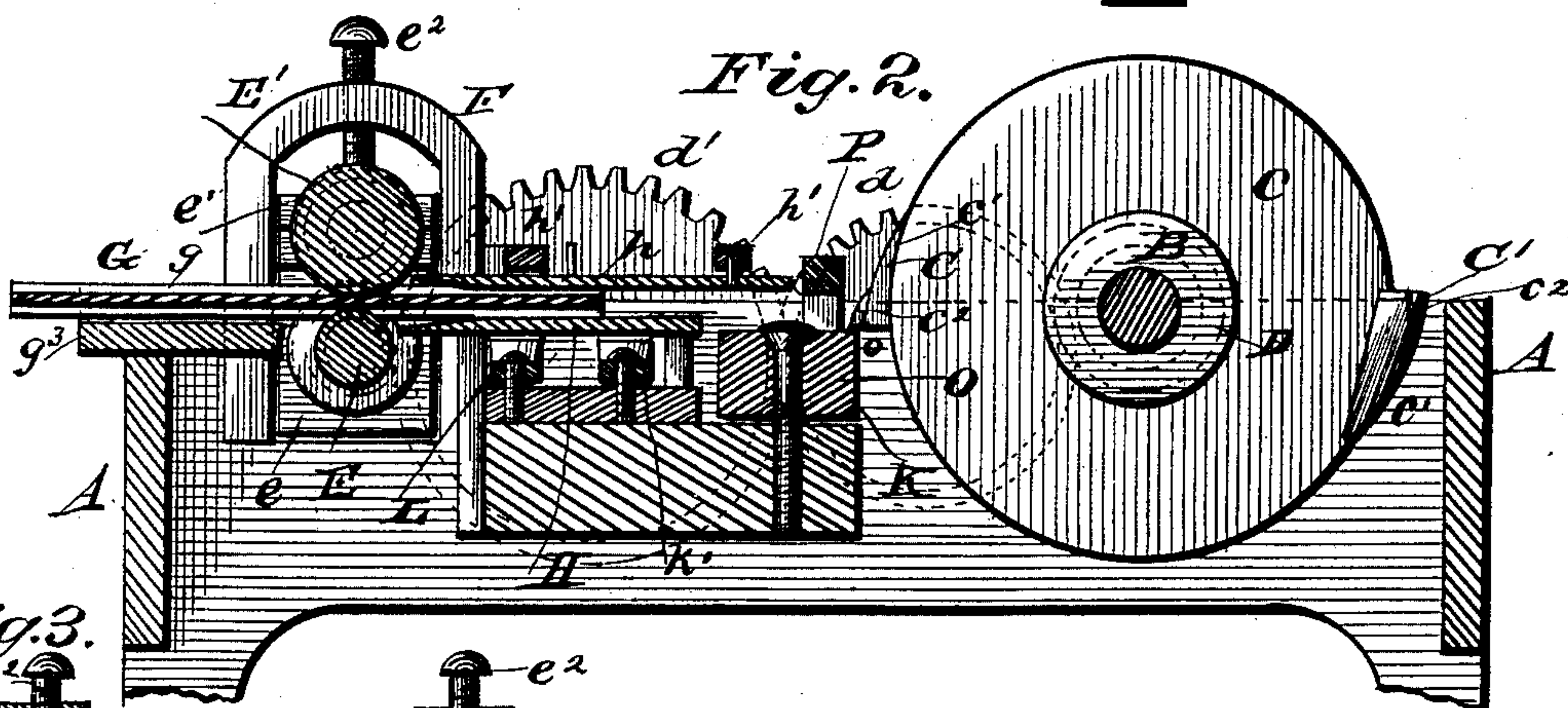
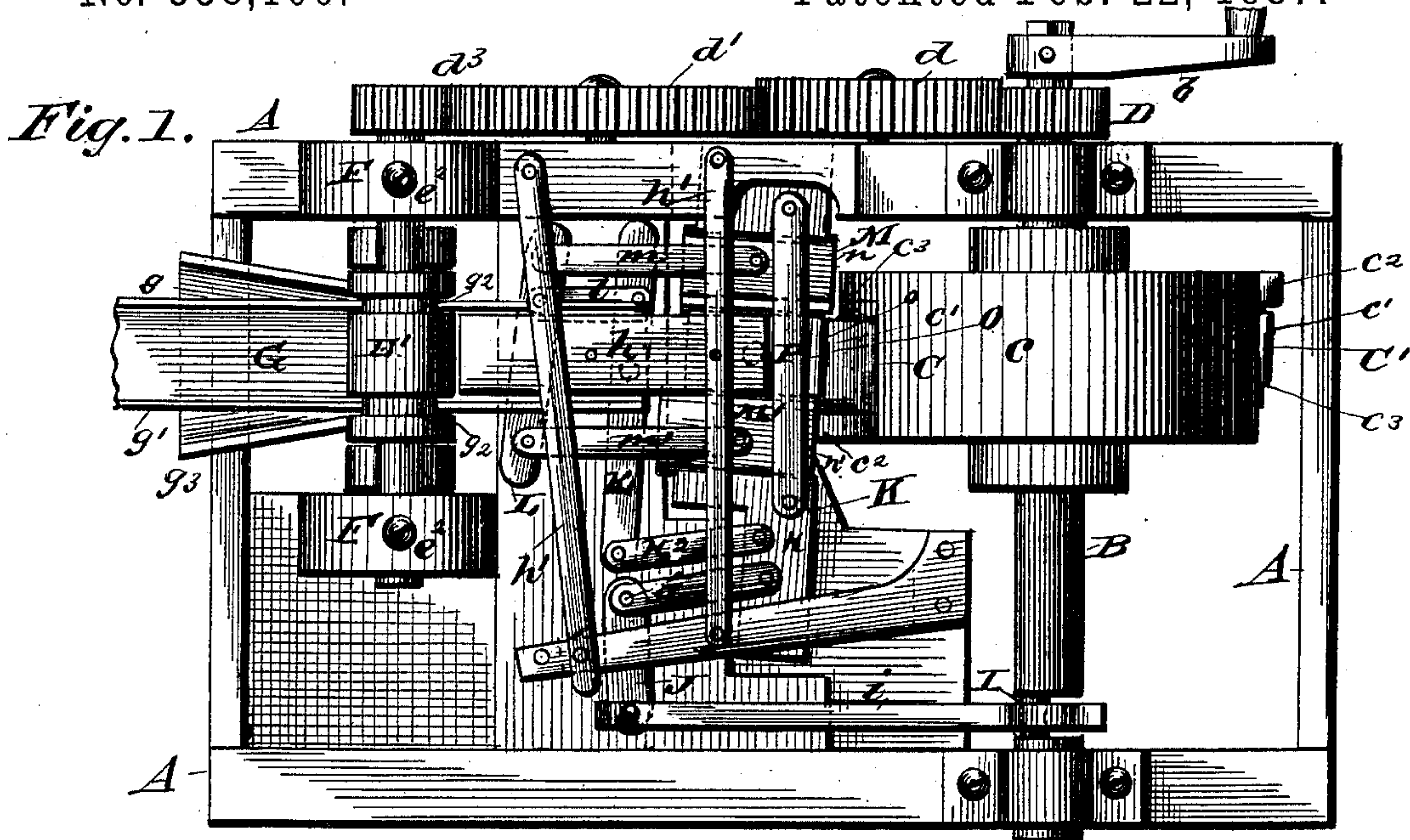


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UNITED STATES PATENT OFFICE.

JOSEPH M. YOUNG, OF JOHNSTOWN, PENNSYLVANIA.

NAIL-MACHINE.

SPECIFICATION forming part of Letters Patent No. 358,100, dated February 22, 1887.

Application filed May 7, 1886. Serial No. 201,486. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH M. YOUNG, 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 Nail and Spike Machines; and I do 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a representation of a plan view. Fig. 2 is a vertical longitudinal section. Fig. 3 is a transverse section through the feed-rolls, and Fig. 4 is a transverse section showing the head-block, &c. Fig. 5 is a detail.

The invention relates to improvements in nail-cutting machines, the main object being to cut the nails rapidly and without loss of material from a prepared strip of iron having on each edge a head-flange; and it consists in the construction and novel arrangement of parts, hereinafter described, illustrated in the drawings, and pointed out in the claims hereto appended.

Referring by letter to the accompanying drawings, A designates the main frame of the machine, of general rectangular form, supported on proper legs, and having journaled upon its sides the transverse shaft B, which can be rotated by means of the crank-handle b, or by a pulley and belt from any suitable source of power.

c is a wheel or disk secured upon the shaft B and carrying the cutter-dies C C' upon its periphery. The said dies are of similar shape and are secured upon the periphery of the wheel c at diametrically-opposite points. The die C has the shank-cutting edge c', the head-cutting edge c'', and the cutting-edge c''', uniting the former two edges and at right angles to each. The head-cutting edge c'' projects outward beyond the shank-cutting edge c' and is adjacent to the inner surface of the wheel c. The shank-cutting edge c' is beveled or inclined from its meeting point with the joining cutting-edge c''' outward and toward the center

of the wheel c. The cutter-die C' has cutting-edges c', c'', and c''', in all respects similar to the edges of the die C, except that the head-cutting edge is adjacent to the outer surface of the wheel c, and the shank-cutting edge is beveled or inclined inward and toward the center of the said wheel.

D is a pinion on the shaft B, outside of its bearing, adjacent to the crank-handle b, and meshing with a gear-wheel, d, the axle of which has a bearing in the side of the main frame A. The said gear-wheel meshes with a gear-wheel, d', also having its axle journaled in the side of the main frame, and which meshes with a pinion, d'', on the end of the axle of a feed-roller, E, extended outside of its bearing. The pinion d'' meshes with an equal-sized pinion, d''', on the extended axle of a roller, E', situated vertically above the roller E. The ends of the axles of said rollers have bearings in journal-boxes resting within the journal-frames F F, which rise from the main frame A at suitable points, the lower journal-boxes, e, being fixed in position, while the upper journal-boxes, e', are rendered vertically adjustable by means of the screws e'', which pass through thread-openings in the top rails of the frames F, and have their ends impinging upon said boxes, so that the distance between the rollers E E' can be altered to suit different thicknesses of metal in the nail-plate.

G is the nail-plate, having on its opposite edges the head-flanges g g', respectively, which flanges stand out from each side of the plate, the web of the latter being of uniform thickness. The said flanges enter the opposing circumferential grooves g'' g'' in the rollers E E' when the nail-plate is fed between said rollers.

Secured to the end of the main frame A is a feeding-table, g'', on which the end of the nail-plate is rested when the said plate is to be fed to the rollers.

H is a guide-plate secured to uprights rising from the main frame and situated on the inner side of the rollers in position to receive on its upper surface the nail-plate after the same passes the rollers. h is a similar but longer plate overlapping the plate H. Between the two is the guideway for the nail-plate to enter and move toward the cutters.

$h' h'$ are transverse bars having their ends secured to proper points of the main frame and overlying and secured to the plate h , so as to keep the same down in position to properly guide the nail-plate.

The cutter-dies $C C'$ are secured to the wheel c on the upper dies, the lower dies and operating mechanism being as follows:

I is an eccentric on the shaft B , near the end opposite to that carrying the crank-handle b , and having attached an eccentric rod or pitman, i , which has its end pivoted to the end of the outer arm of a lever, J , pivoted near its center upon the lid of the main frame A . The end of the inner arm of the said lever is pivoted to one end of a link-bar, j , the other end of which is pivoted to the inner rail or head-block, k , of a vibrating frame, K , the outer rail, k' , of which is connected to the said head-block by the link-bar k'' , having its ends pivoted upon the head-block and outer rail, respectively. Both the head-block k and outer rail, k' , are pivoted near their centers upon the bed of the main frame, so that they will vibrate parallel to each other when actuated by the eccentric-rod, lever J , and link-bar j .

L is a vibrating lever pivoted about centrally upon the bed of the main frame at a point a sufficient distance outward from the rail k' and considerably shorter than said rail.

l is a link-bar having one end pivoted upon the rail k' and the other end upon the lever L , the pivot-points of said link-bar being on the same side of the pivot-points of the rail k' and lever L . As the distance between the link-bar and pivot of the lever L is shorter than that between the same and the pivot of the bar k'' , the link-bar will have a larger angle of vibration than the said rail or than the frame K .

$m m'$ are link-bars having the outer ends pivoted, respectively, to the ends of the inner and outer arms of the vibrating lever L and their inner ends to the rectangular reciprocating die-blocks $M M'$, which have their edges beveled, so as to move in beveled or dovetailed ways $m'' m''$, made transversely in the head-block k of the frame K . The inner ends of the blocks $M M'$ are provided with the cutting or shearing edges nn' , respectively, and the blocks are situated one on each side of a die-block, O , secured to the head-block k and vibrating therewith, the said block O having on its inner end a shearing or cutting edge, o , as shown.

P is a guide and holding bar having its ends secured to the head-block k , outside of the die-

blocks $M M'$, and provided on its under surface with grooves $P' P'$, to receive the upper parts of the head-flanges $g g'$ of the nail-plate G .

The parts are so arranged that the frame K as it vibrates presents the cutting-edge of the die-block O adjacent to and parallel with the edge of the cutter-die C as the same is brought to said block by the rotation of the wheel c , and at the same time the die-block M' is retracted, so that the head-cutting edge c'' will cut the flange g to form one side of the nail-head, while the shank-cutting edge c' cuts the web of the nail-plate, and the die-block M' is protracted to support the projecting part of the flange g' , which forms part of the head of the next succeeding nail. When the frame K vibrates in the opposite direction and the cutter-die C' comes to the block O , the said succeeding nail is cut from the nail-plate and finished, as described above in regard to the first nail or the first cut on the nail-plate.

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

1. In a nail-cutting machine, the combination of the cutter-dies $C C'$, each provided with the edges $c' c'' c'''$ and secured to the periphery of the wheel c , the grooved rollers $E E'$, actuated by gearing from the main shaft, the guide-plate H , the eccentric I and pitman i , the lever J and link-bar j , the vibrating frame K , the cutter-bar O , attached thereto, the vibrating lever L , the link-bar l , the link-bars $m m'$, and reciprocating die-blocks $M M'$, all constructed and arranged substantially as specified.

2. In a nail-machine, the combination of the cutter-dies secured to the periphery of the rotating wheel on the main shaft, the roller E , rotated by means of gearing from the main shaft, the roller E' , rotated from the roller E and rendered vertically adjustable by the sliding journal-blocks e and set-screws e'' , the guide-plate H , the vibrating frame actuated by means, substantially as described, from the main shaft, the oppositely-reciprocating die-blocks $M M'$, the die-block O , moving with the vibrating frame, and the guide-bar P , secured to the vibrating frame and provided with the grooves p for the head-flanges $g g'$ of the nail-plate G , substantially as specified.

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

JOSEPH M. YOUNG.

Witnesses:

JNO. P. LINTON,

MICKEL A. EICHENSEHER.