(No Model.) 4 Sheets—Sheet 1.

A. NEWTON.

MACHINE FOR POINTING WIRE NAILS.

No. 350,837. Patented Oct. 12, 1886.

Fig. 1.

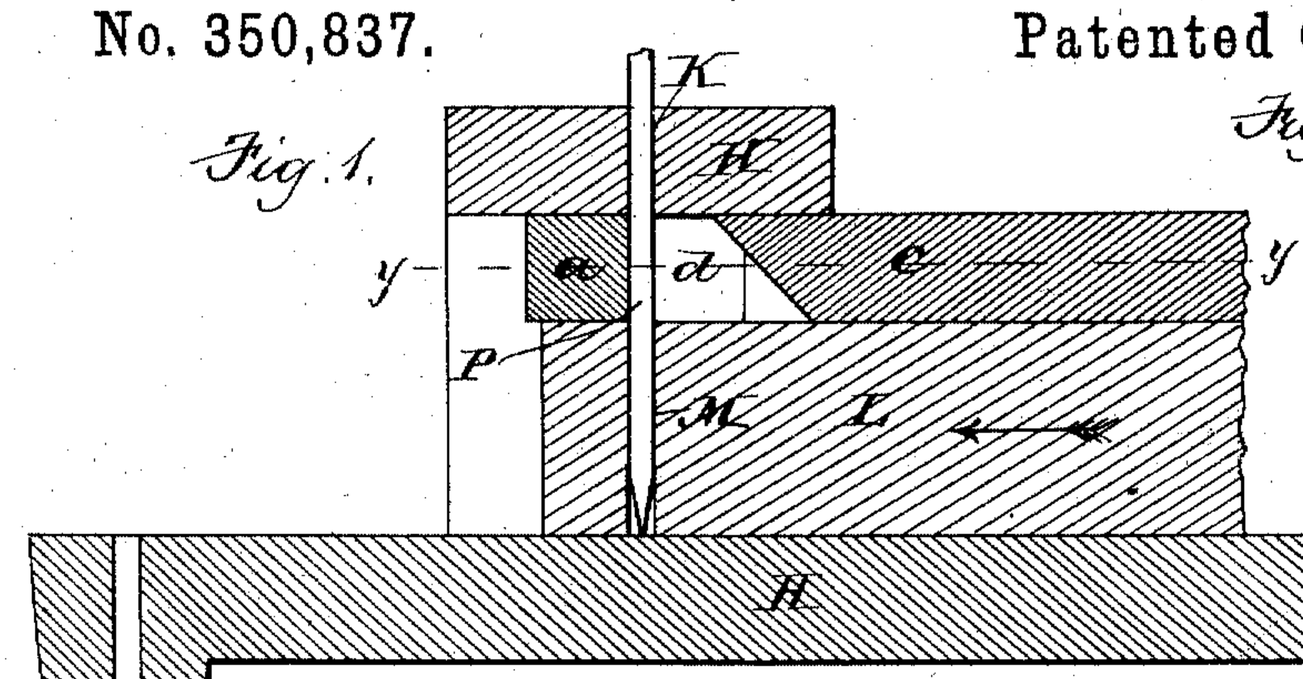


Fig. 1a

Fig. 1b

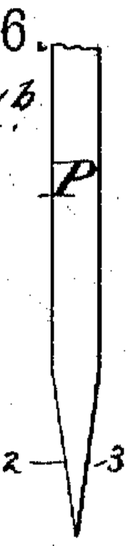


Fig. 2.

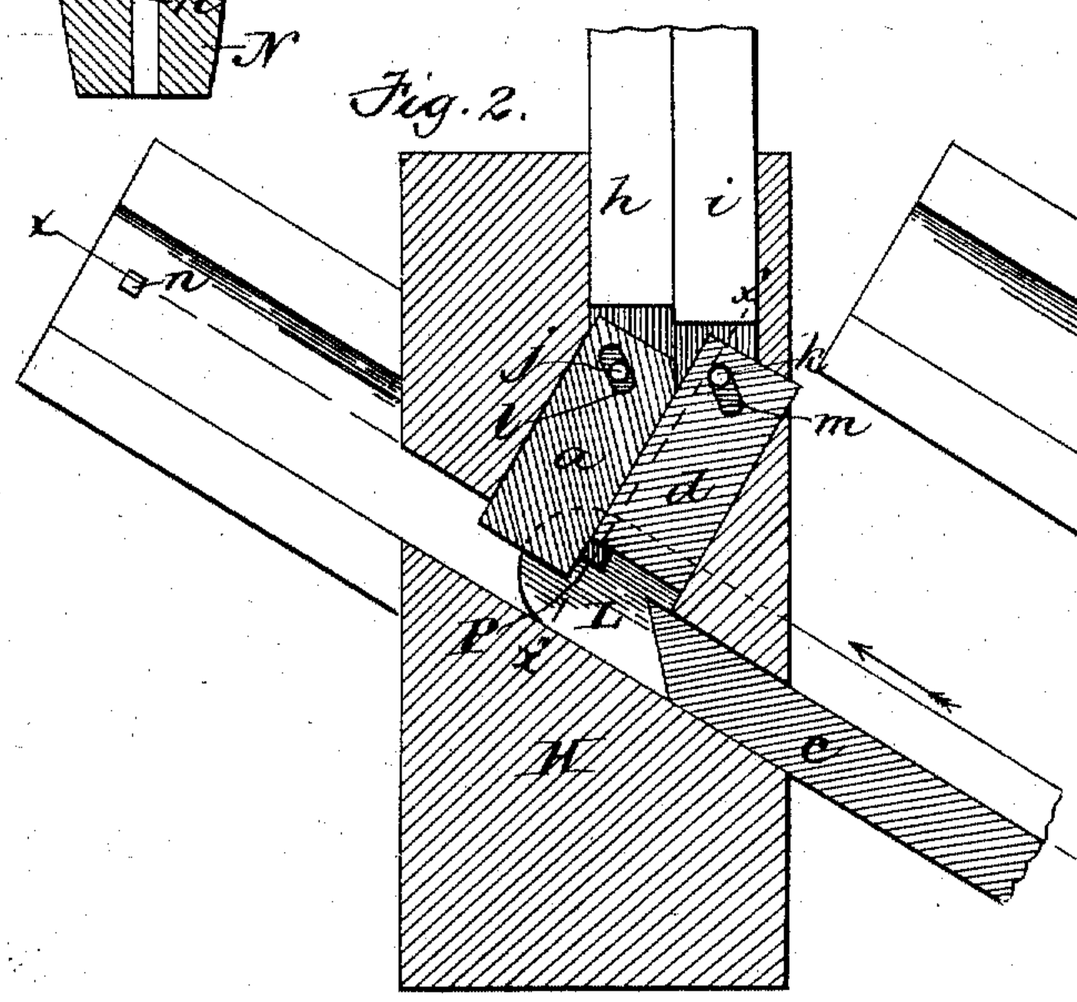


Fig. 3.

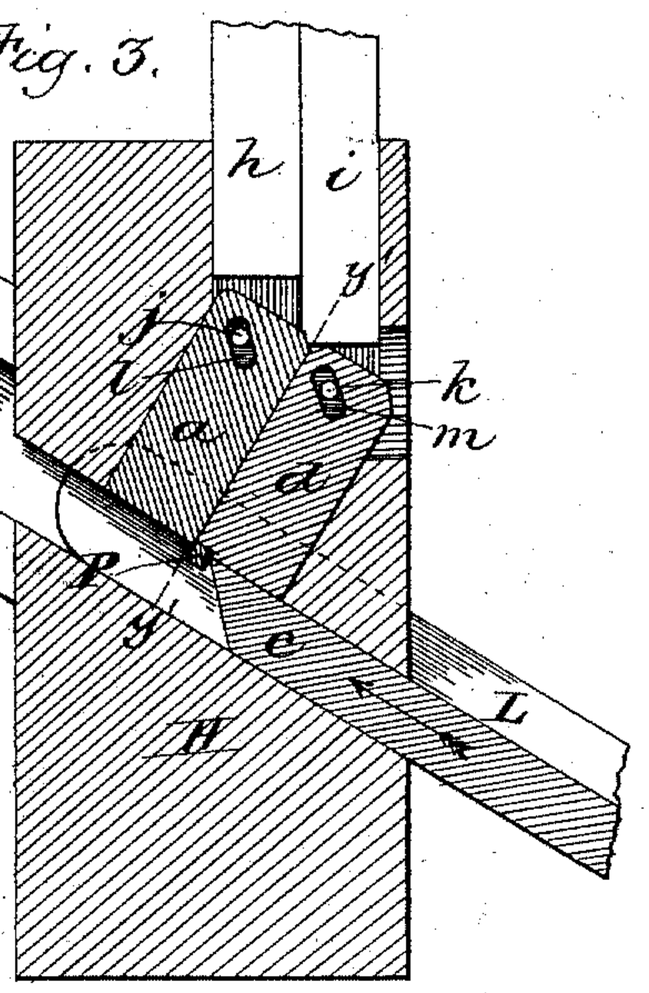


Fig. 4.

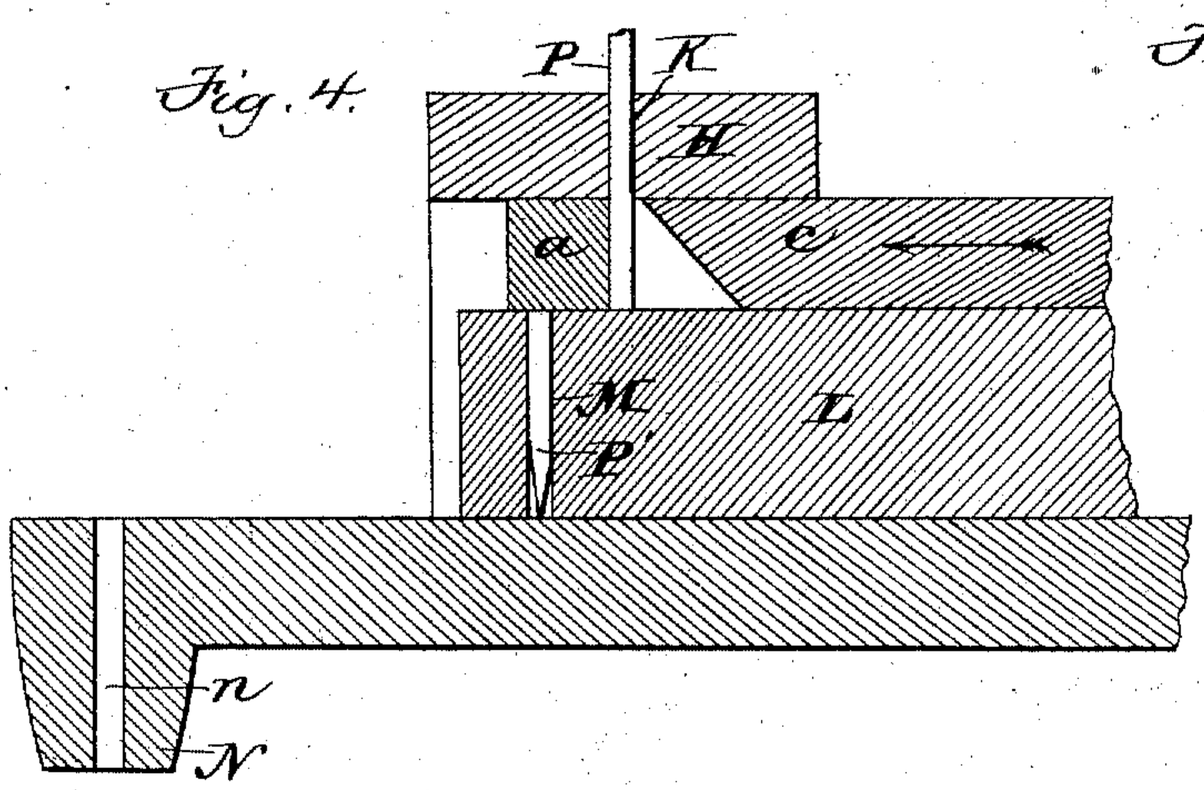
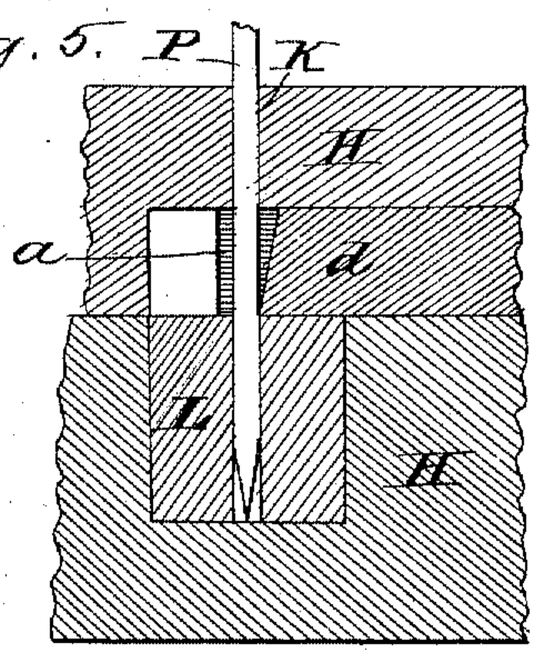


Fig. 5.



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(No Model.) 4 Sheets—Sheet 2.

A. NEWTON.

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Fig. 6.

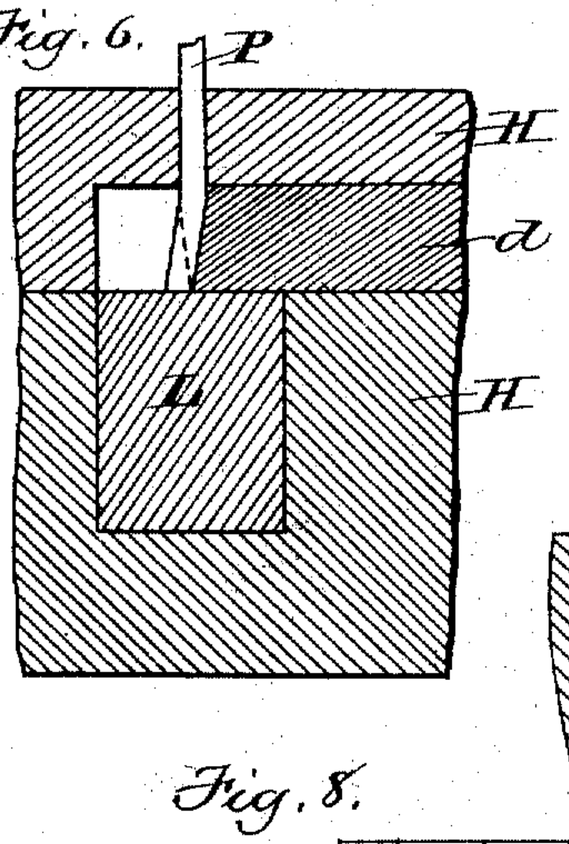


Fig. 7.

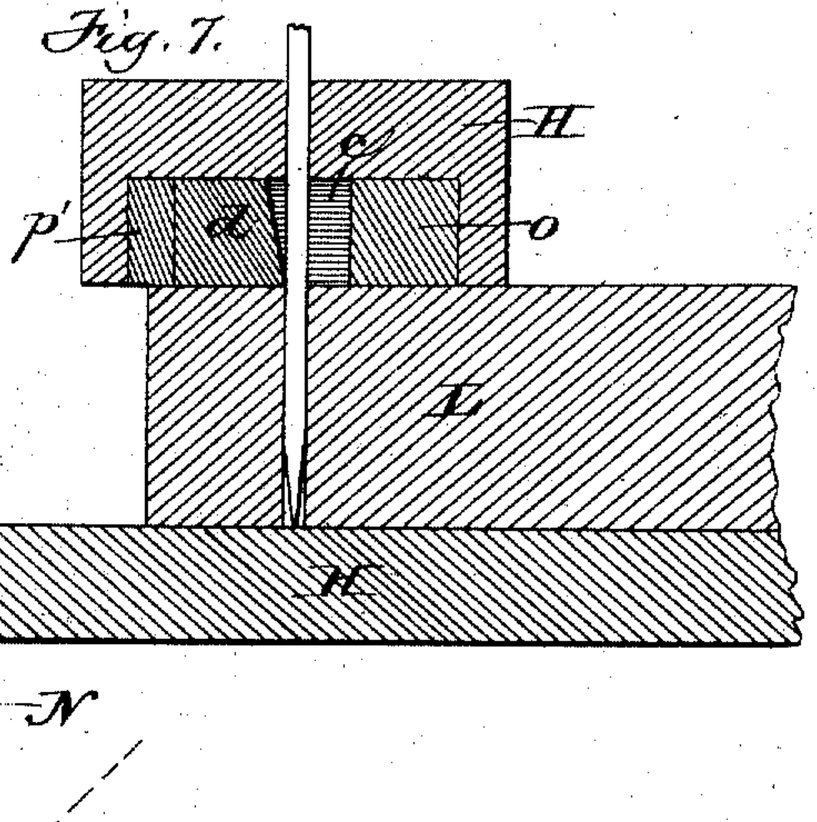


Fig. 8.

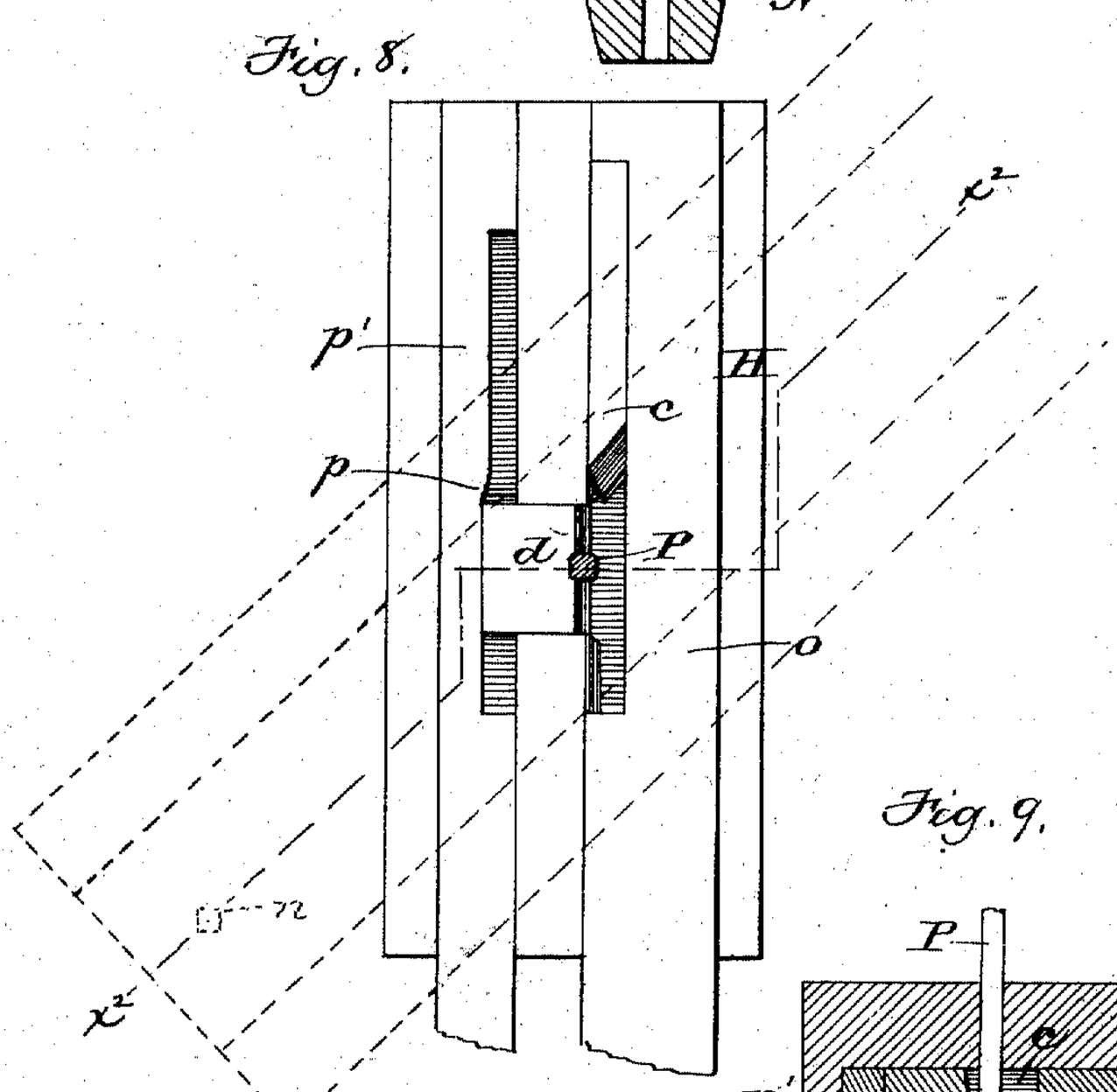
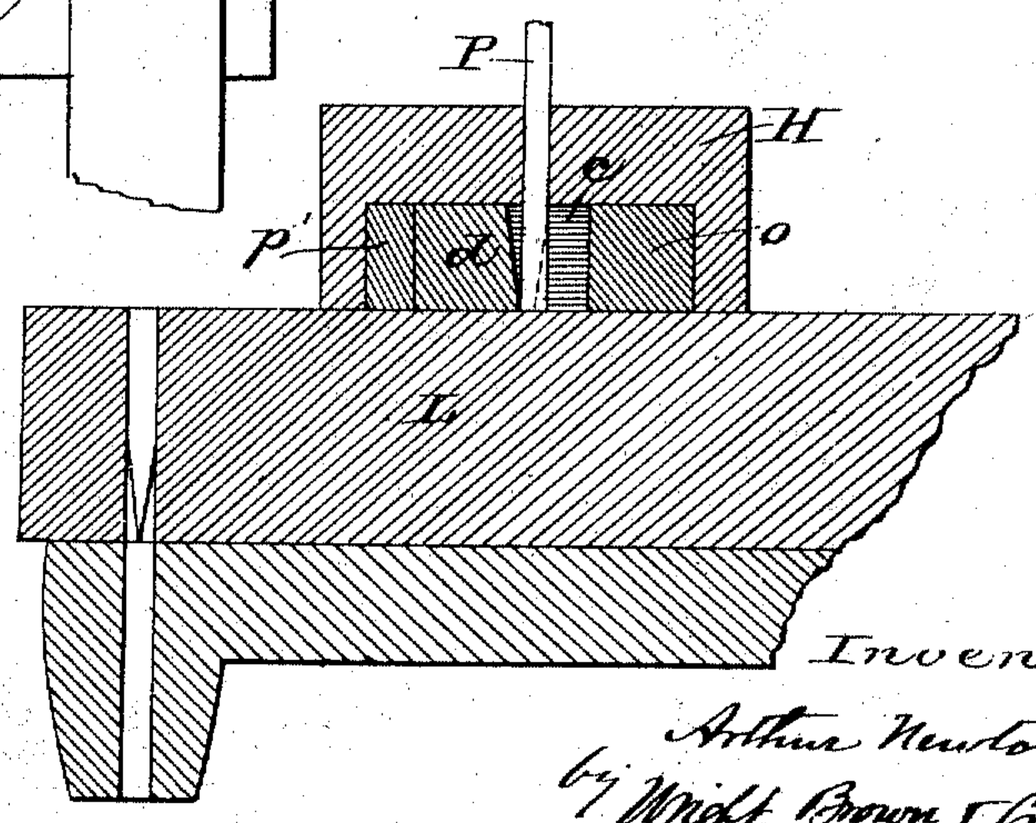


Fig. 9.



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A. NEWTON.

MACHINE FOR POINTING WIRE NAILS.

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Fig. 10.

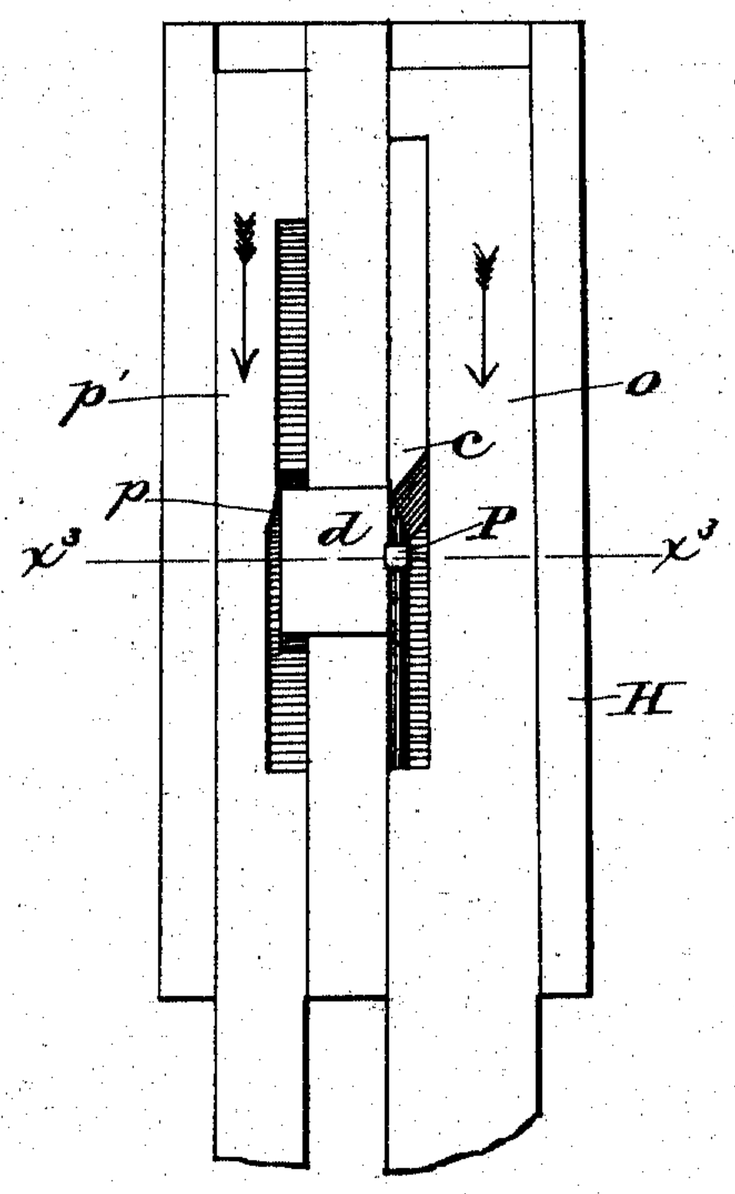


Fig. 11.

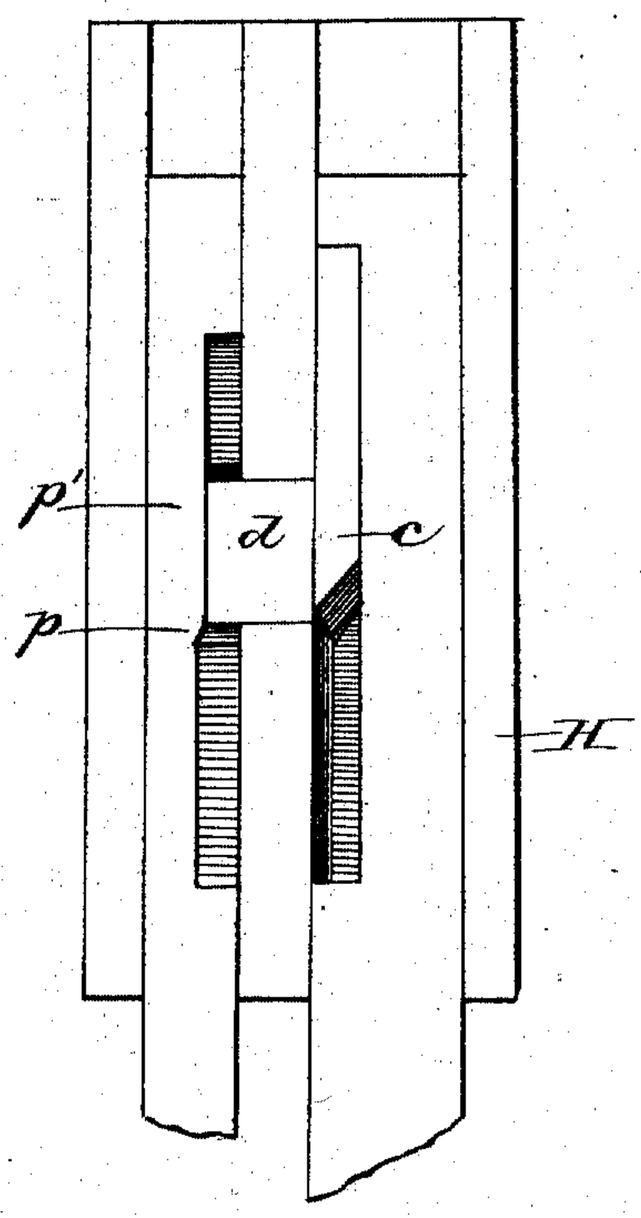


Fig. 12.

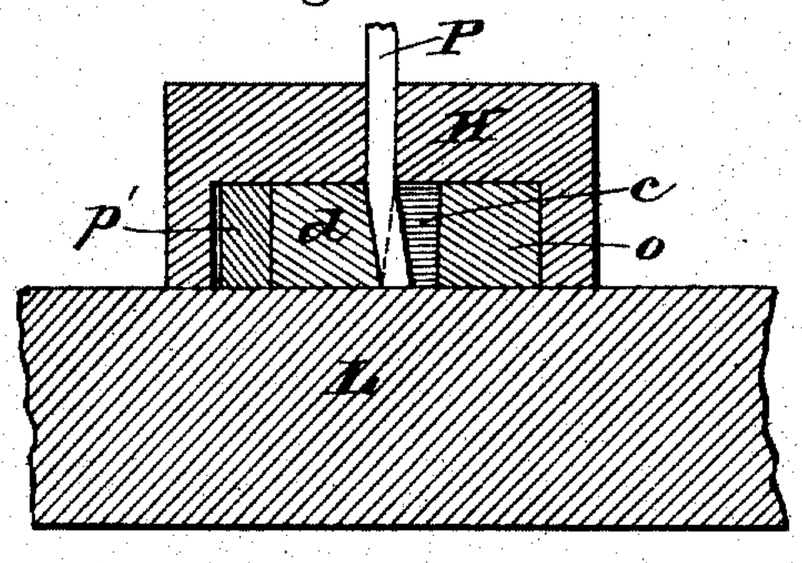
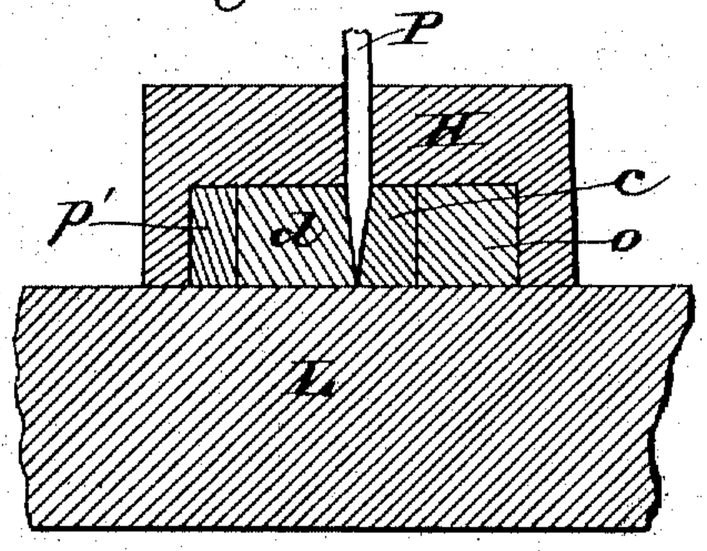


Fig. 13.



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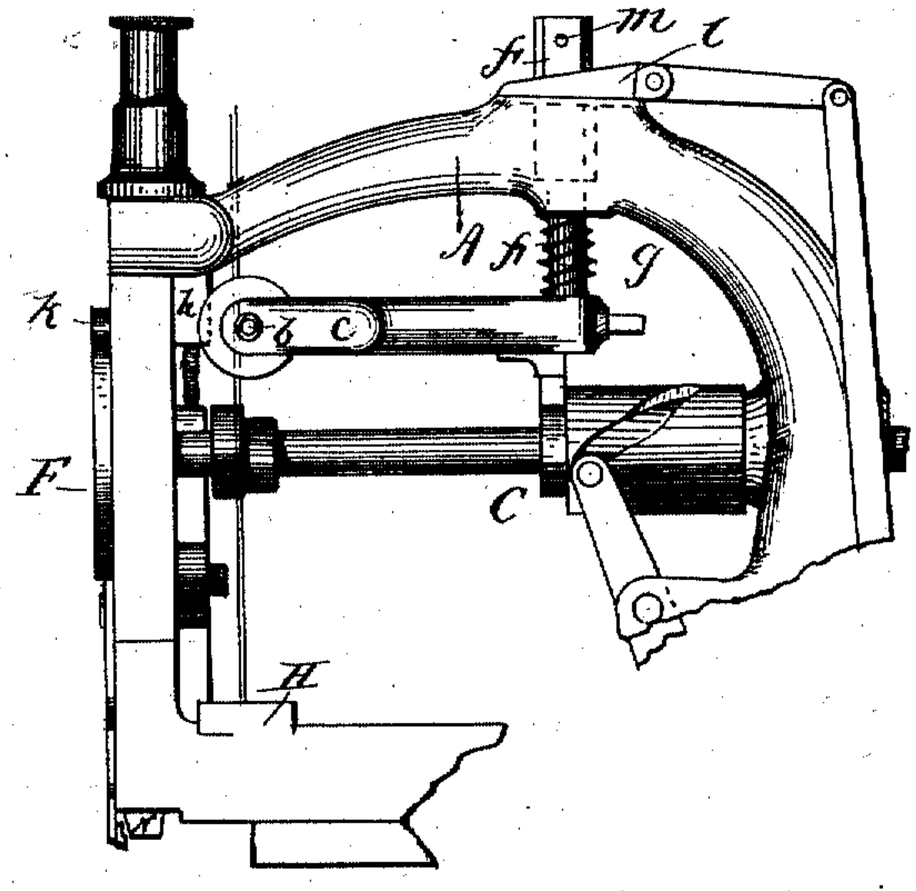
A. NEWTON.

MACHINE FOR POINTING WIRE NAILS.

No. 350,837. Patented Oct. 12, 1886.

Fig. 14.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR POINTING WIRE NAILS.

SPECIFICATION forming part of Letters Patent No. 350,837, dated October 12, 1886.

Application filed January 5, 1886. Serial No. 187,670. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR NEWTON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Nailing-Machines, of which the following is a specification.

This invention relates to the manufacture of nails from a continuous wire, and has especial reference to machines which form nails from a continuous wire supplied to the machine and drive them into or through boot or shoe soles.

The invention consists in the means hereinafter described for forming chisel or wedge shaped points on wire nails.

The invention also consists in an improved organized nailing-machine, in which are combined a cutter for trimming a portion of a wire to form an approximate point at its end, means for feeding and means for severing the wire and carrying forward the severed section to the driver, the arrangement being such that the cutter trims off a portion of the wire before it is fed and severed and carried under the driver, all of which I will now proceed to describe.

In the accompanying drawings, forming a part of this specification, Figures 1ª and 1ᵇ are side views of a piece of wire, showing my improved method of pointing nails. Fig. 1 represents a longitudinal section of an organization of devices for forming wedge-shaped points on wire nails, said organization being shown as a part of a boot and shoe sole nailing machine. Fig. 2 represents a section on line *y y*, Fig. 1. Fig. 3 represents a similar section at a different stage of the operation. Fig. 4 represents a section on line *x x*, Fig. 2, showing the parts in the same position as in Fig. 3. Fig. 5 represents a section on line *x′ x′*, Fig. 2. Fig. 6 represents a section on line *y′ y′*, Fig. 3, showing the parts in the same position as in Fig. 4. Fig. 7 represents a longitudinal section of a somewhat different organization of devices for forming wedge-shaped points on wire nails from that shown in the preceeding figures, the section being taken on line x^2 x^2, Fig. 8. Fig. 8 represents an inverted plan of the parts above the line *y y*, Fig. 7, or, in other words, a section on said line *y y*, looking upwardly. Fig. 9 represents a longitudinal section showing the manner of severing each nail from the wire. Fig. 10 represents a view like that shown in Fig. 8, showing the wire-bending die moved to bend the wire and the point-forming cutter advancing. Fig. 11 represents a view like that shown in Fig. 10, after the point has been formed. Fig. 12 represents a section on line x^3 x^3, Fig. 10. Fig. 13 represents a section on line y^2 y^2, Fig. 11. Fig. 14 represents a vertical section of a nailing-machine to which my improvements are applicable.

The same letters of reference indicate the same parts in all the figures.

My improved method of forming chisel or wedge shaped points on wire nails consists in first bending the wire P near the end to be pointed, as shown in Fig. 1ª, thus giving one side of the wire a beveled surface, 2, having the inclination required for one side of the wedge-shaped point, and then cutting or trimming off the wire diagonally across the bent portion, as indicated by the dotted line in Fig. 1ª, to form the opposite side, 3, of the wedge-shaped point, as shown in Fig. 1ᵇ, so that the point is formed partly by bending and partly by cutting.

The best means that I have devised for carrying this method into effect are shown in Figs. 1 to 6, which I will first describe, said means being shown as a part of a boot and shoe sole nailing machine of the class shown in Letters Patent of the United States No. 243,601, granted to me June 28, 1881. A side view of said machine is shown in Fig. 14.

H represents a fixed frame or casing, having an orifice or fixed wire-guide, K, to receive and guide the wire P, and a guide or way in which a slide, L, is adapted to reciprocate horizontally. Said slide has an orifice, M, which at a given point in the movement of the slide registers with the wire-guide K in the casing H, and receives the wire P, as shown in Fig. 1. The slide is reciprocated by any suitable means, (for example, such as are shown for reciprocating the slide L in the above-named patent,) and in moving forward in the direction indicated by the arrow in Figs. 1 and 2 co-operates with a block, *a*, which is temporarily moved to the position shown in

Figs. 1, 2, and 4, so as to bear on the rear side of the wire, the slide L and block *a* constituting shears, which are caused by the forward movement of the slide to sever a nail, P′, which has been previously pointed from the wire P, said nail being carried forward by the slide until it stands over an orifice, *n*, in a delivering-nose, N, formed on the fixed frame or casing H. The slide is held in this position while a driver descends through it and through the orifice *n* and drives the nail into a boot or shoe presented to the nose N, as shown in my former patent.

c represents a trimming-blade attached to the slide L, and having its cutting-edge behind the orifice M in said slide.

d represents a block fitted to slide in the frame or casing H beside the block *a*. Said blocks *a* and *d* are reciprocated independently by any suitable means, so as to operate as follows: After the wire has been inserted in the slide L, as shown in Fig. 1, the block *a* is moved outwardly, so as to bear against the rear side of the wire, as shown in Fig. 2. After the nail has been severed by the forward movement of the slide, as previously described, the block *a* is withdrawn from behind the wire, and before the cutter *c* reaches the wire the block *d* is moved forward against the wire, and thus caused to bend the latter diagonally across the path of the edge of the cutter, as shown in Fig. 6, said path being there indicated by dotted lines. The end of the block *d* is beveled, as shown, so that it gives the side of the wire against which it bears the incline 2, which forms one of the sides of the wedge-shaped point, while the edge of the cutter is oppositely beveled, so that when it reaches the wire it trims off a part of the bent portion, and in so doing forms the other side, 3, of the wedge-shaped point, Figs. 1^a and 1^b, the point being thus completed. After the cutter has acted on the wire the block *d* is moved back, as shown in Figs. 2 and 5, and when the slide L returns to the position shown in Fig. 1, after delivering the last nail to the driver, the pointed end of the wire is fed into the slide by the mechanism shown in Fig. 14, and fully described in my former patent, or any other suitable feed mechanism, and another nail is severed by the next forward movement of the slide. In this way the wire is pointed after the severing of each nail.

The mechanism for feeding the wire P, as described in my former patent and shown in Fig. 14, is composed of a pair of plates or feed-jaws, *a*, located on rods *b*, which are adapted to slide in bearings in a bifurcated yoke or frame, *c*. The jaws *a* may be coated with rubber on their proximate surfaces, or may have steel plates with grooved or roughened surfaces, the latter being preferable, and the wire to be fed is interposed between said surfaces. Springs on the rods *b* press the jaws *a* against the wire, and cause them to normally hold or grasp the same with sufficient tightness to enable them, when moved toward the block H, to feed the wire into said block. The frame *c* is provided with a vertical arm, *f*, adapted to slide in a socket in the frame A. The frame *c* is pressed by a spring, *g*, against the cam C on the driving-shaft, and is therefore reciprocated vertically when the shaft rotates.

h represents a wedge located on the driver-bar, which bar is also reciprocated vertically by means of the cam F, a stud, *k*, from said bar bearing on the cam, and a spring adapted to force the driver-bar abruptly downward when the cam passes from under the stud *k*. The wedge *h* is so arranged and the driver-bar is so timed in its movements that when the feed-jaws *a* rise the wedge will also rise, and at the same time insert itself between and separate the jaws *a*, so that during their upward movement they will not move the wire. When the jaws *a* have completed their upward movement, they descend before the driver-bar, so that the wedge remains behind, and the jaws are caused by their springs to grasp the wire and feed it downward into the blocks H and L. The length of movement given to the wire, and consequently the length of each nail, is determined by a sliding wedge, *l*, on the frame A, said wedge constituting an adjustable stop for a pin, *m*, on the arm *f*, and limiting the downward movement of said arm *f*, the frame *c*, and the feed-jaws *a*. When the operator desires to change the length of the nails, he moves the wedge *l* in one direction or the other, thereby permitting the arm *f* to descend more or less. The wedge *l* may be moved by the operator's foot through a treadle and suitable intermediate mechanism, so that the length of the nails may be varied while the machine is in operation.

I have shown in the present instance as the means for operating the blocks *a d* two slides, *h i*, fitted to reciprocate in guides in the casing H, and having studs *j k* at their inner ends entering diagonal slots *l m* in the blocks *a d*. The slides *h i* are reciprocated longitudinally by cams or other well-known means, and their studs *j k*, acting on the sides of the slots *l m*, reciprocate the blocks, as will be readily understood.

In the organization shown in Figs. 7 to 13, the cutter *c*, instead of being attached to the slide L, is attached to or framed on a separate bar, *o*, fitted to slide in a guide in the casing H, above the slide L, and the wire-bending block or die *d* is moved against the wire by an incline or cam, *p*, fitted to slide in a guide in the casing H parallel with the cutter-bar *o*. The operation of these devices is substantially the same as of those first described. The wire is severed by the co-operation of the slide *p′* and the bending die or block *d*, the latter standing in the position shown in Fig. 7 when the slide commences to move forward. After the wire is severed the bars *o p′* move forward simultaneously, the cam *p* moving in advance of the cutter, and causing the block *d* to bend the wire, as shown in Fig. 12, before the cutter reaches it. The cutter then trims the wire

and completes the point, as shown in Figs. 11 and 13. When the bars *o p'* have moved back after the completion of the point, the block *d*, being unsupported from behind, yields to the downward movement of the wire when the latter is fed into the slide L, and is thus restored to the position shown in Fig. 7.

It will be seen that the portion of the wire which is severed to form the nail is shaped or trimmed by the cutter before it is fed into the nail-receiving orifice M of the slide L, and therefore before it is severed from the main wire by the movement of said slide which carries the completed nail under the driver. The combination of devices essential to the accomplishment of this result does not necessarily include the bending devices.

While my invention is intended mainly for boot and shoe nailing machines it is obvious that it may be used for forming points on other kinds of wire nails.

The wire shown in this instance is rectangular, but any other form of wire may be used.

It is obvious that the order of the cutting and bending operations may be reversed, the cutting being performed before the bending.

I claim—

1. The combination of a fixed guide for a nail-wire, a reciprocating cutter, as *c*, and a reciprocating block or die, whereby the wire is bent diagonally across the plane in which the edge of the cutter moves, as set forth.

2. The combination of a fixed guide for a nail-wire, a reciprocating cutter, as *c*, a reciprocating bending block or die, whereby the wire is bent diagonally across the plane in which the edge of the cutter moves, and means, substantially as described, for severing the wire transversely, as set forth.

3. The combination of a fixed wire-guide, a movable block, as *a*, which alternately stands behind and is withdrawn from the wire in said guide, a cutting-slide, L, which co-operates with the block *a* in severing a nail from the main wire, a bending-die which bends the ends of the main wire after the nail is severed therefrom, and a cutter attached to said slide, whereby the bent portion of the wire is trimmed, as set forth.

4. The casing H, bar *o*, and knife or cutter *c*, in combination with the slide L and means for feeding the wire, substantially as described, the arrangement being such that the knife trims off a portion of the wire before it is fed into the slide L, by which it is severed and carried under the driver.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 2d day of January, 1886.

ARTHUR NEWTON.

Witnesses:

C. F. BROWN,

ARTHUR W. CROSSLEY.