

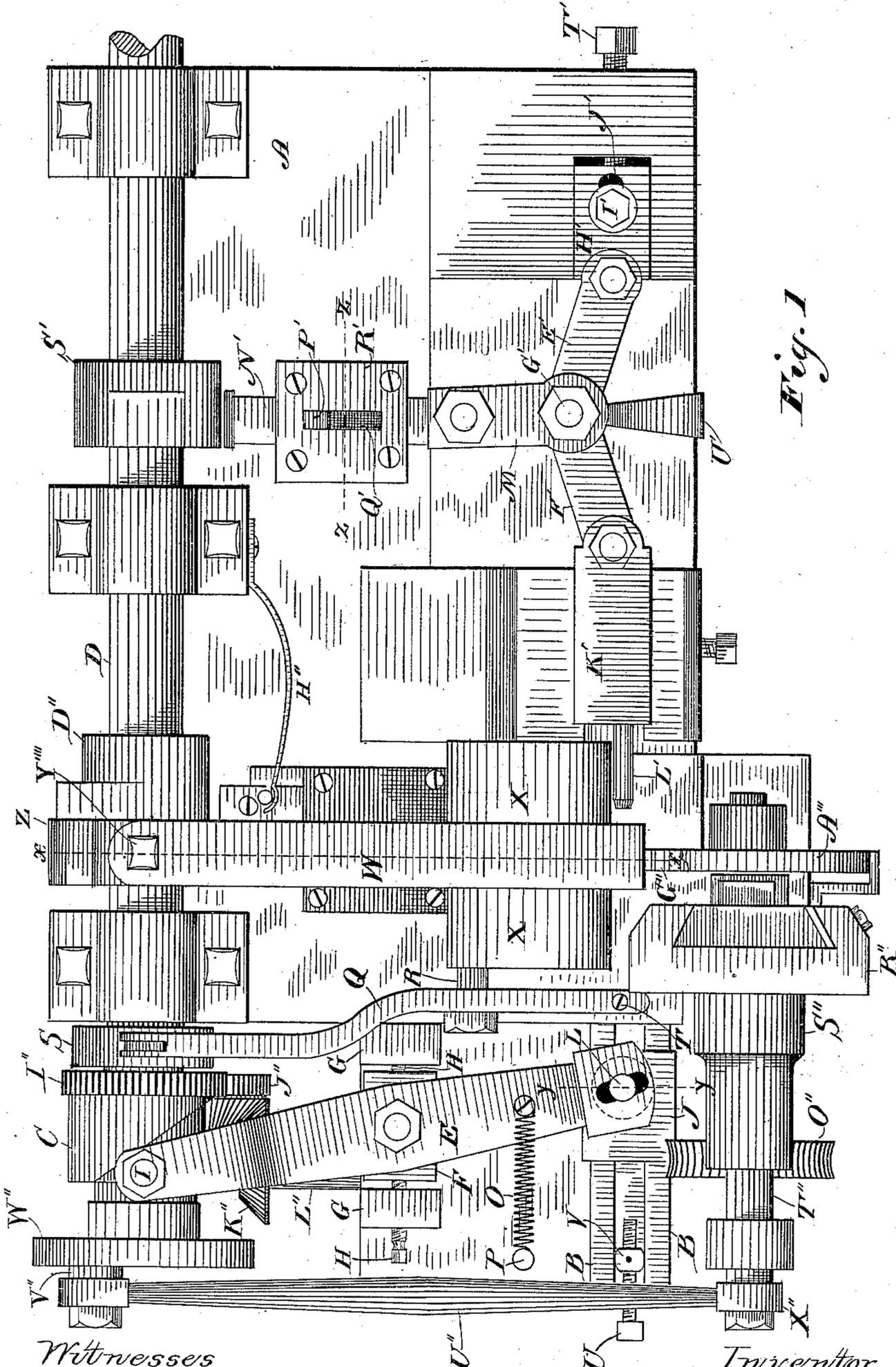
(No Model.)

5 Sheets—Sheet 1.

J. S. FOLLANSBEE.  
WIRE NAIL MACHINE.

No. 330,219.

Patented Nov. 10, 1885.



*Fig. 1*

Witnesses  
*S. Williamson*  
*P. M. Smith*

Inventor  
 John S. Follansbee  
 By *Wooster Smith*  
 Attys.

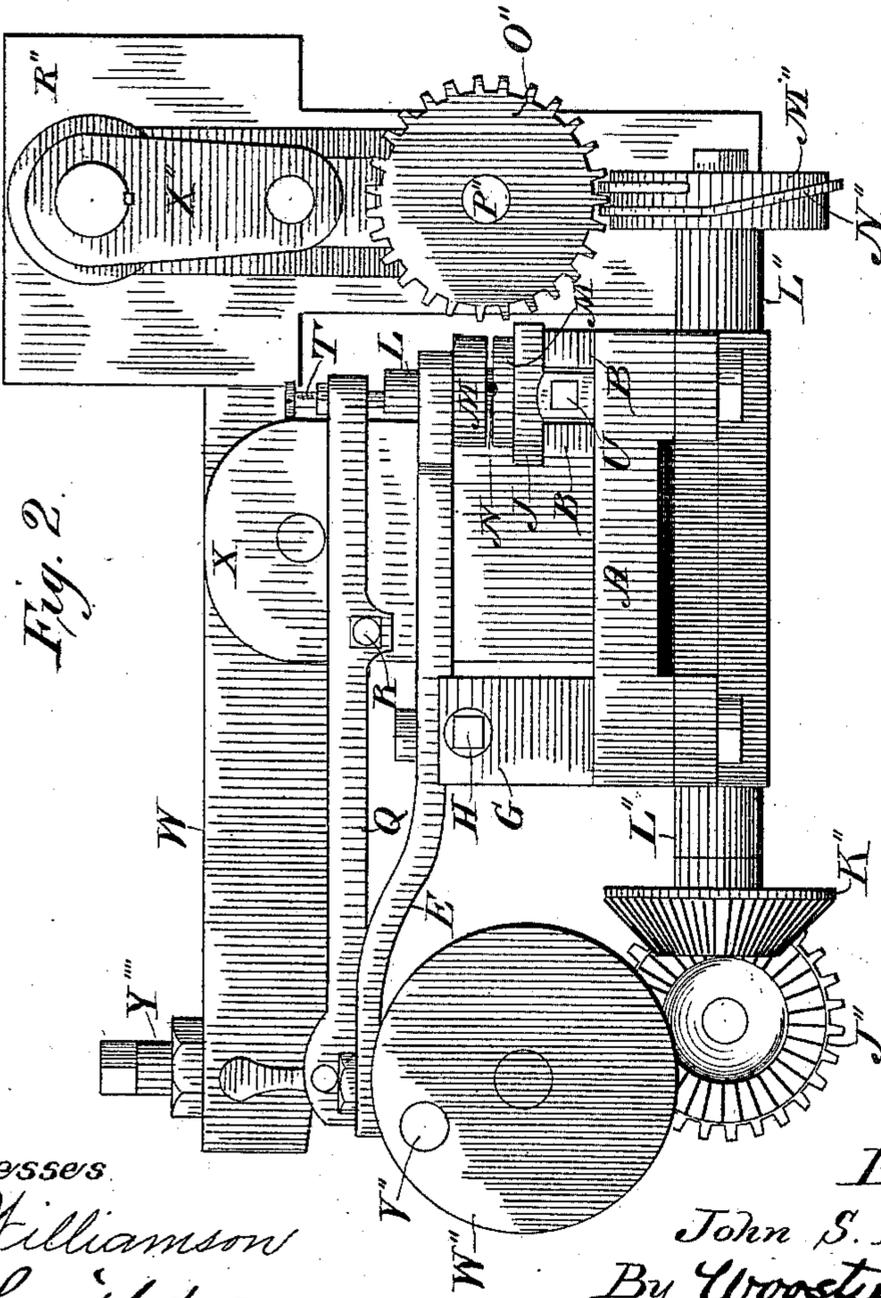
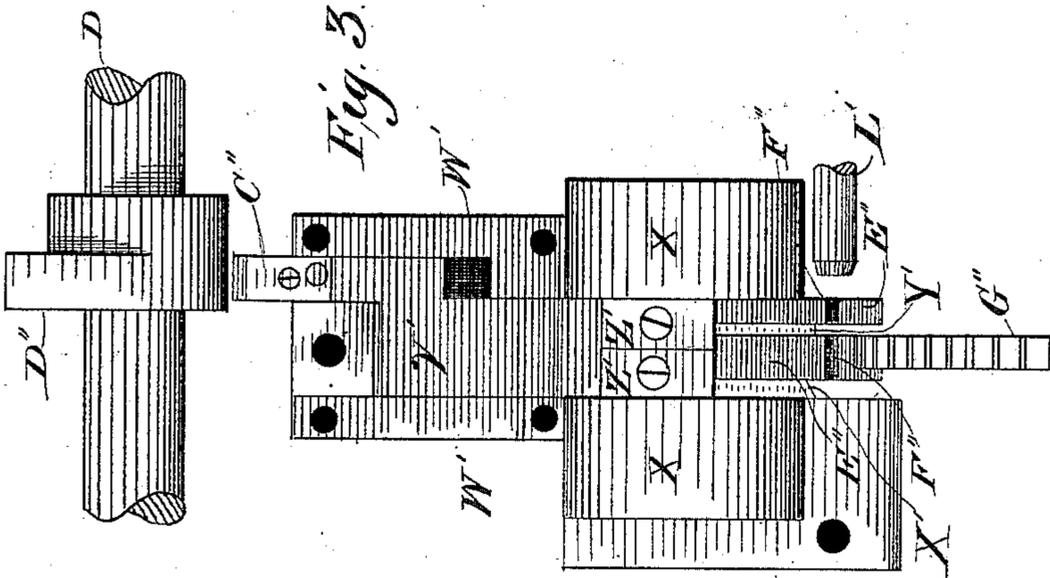
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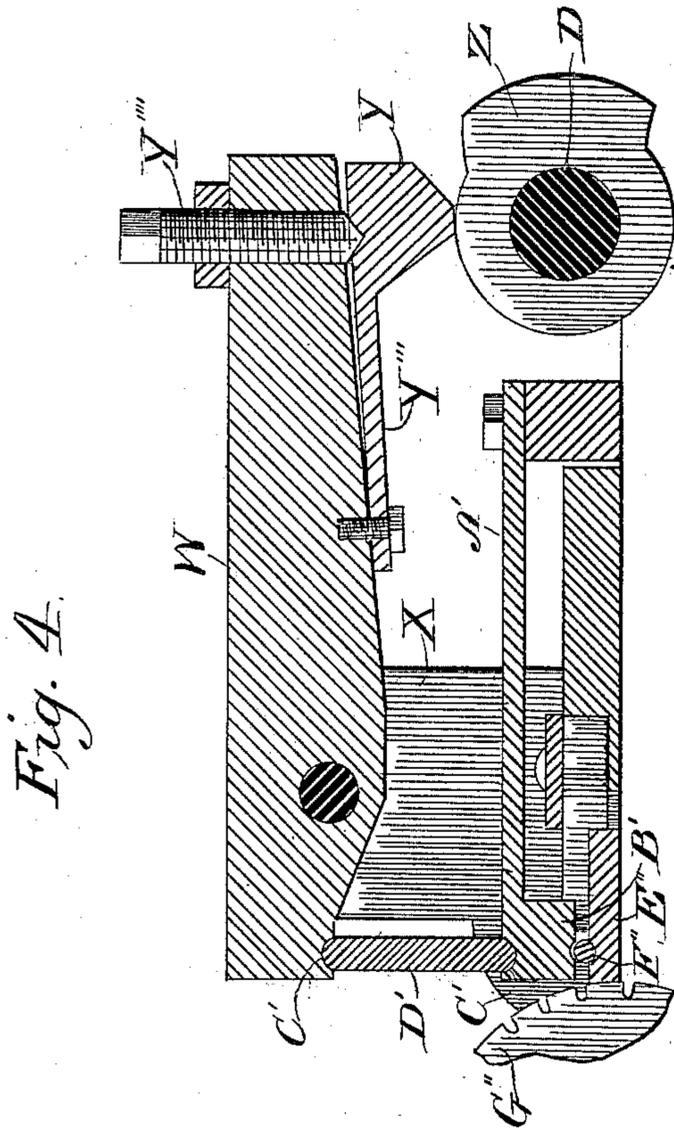
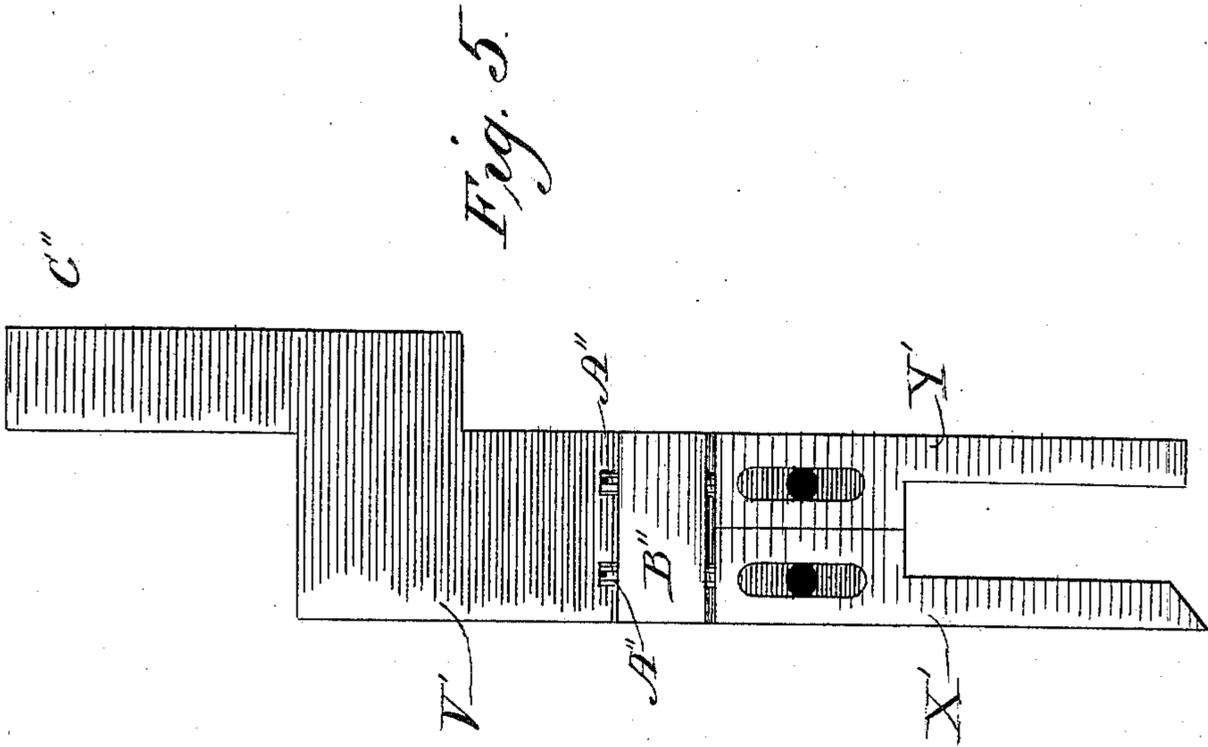
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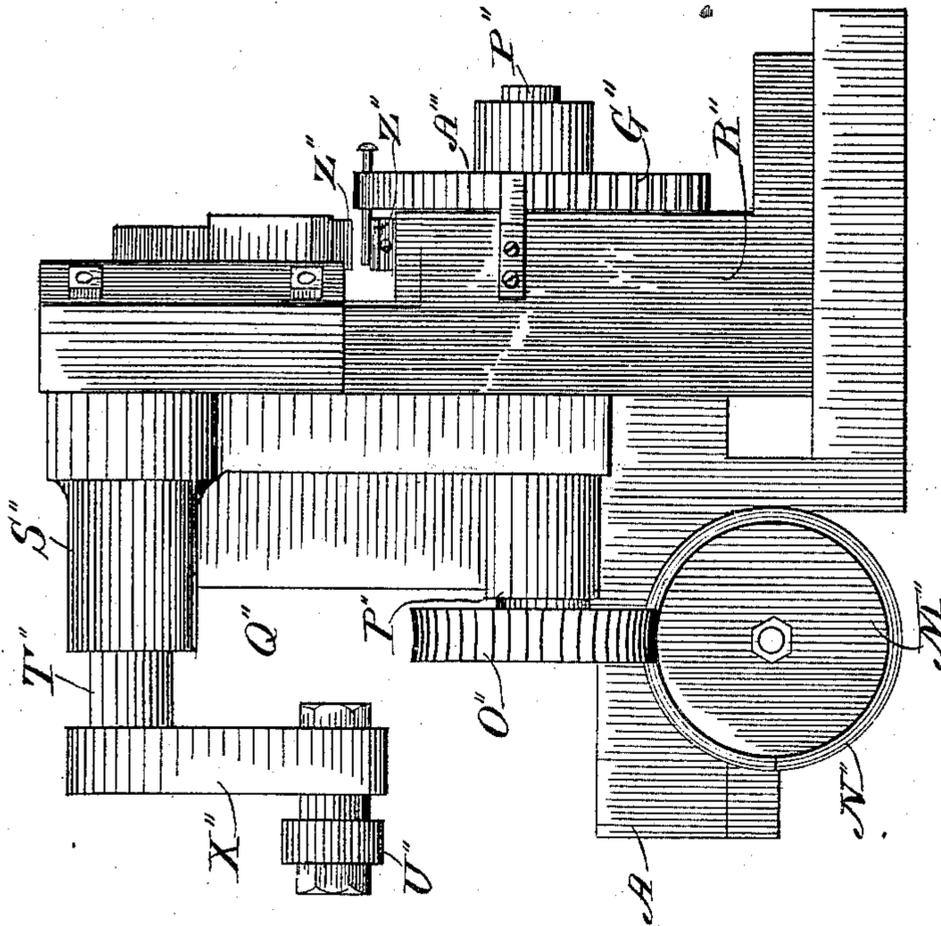
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J. S. FOLLANSBEE.  
WIRE NAIL MACHINE.

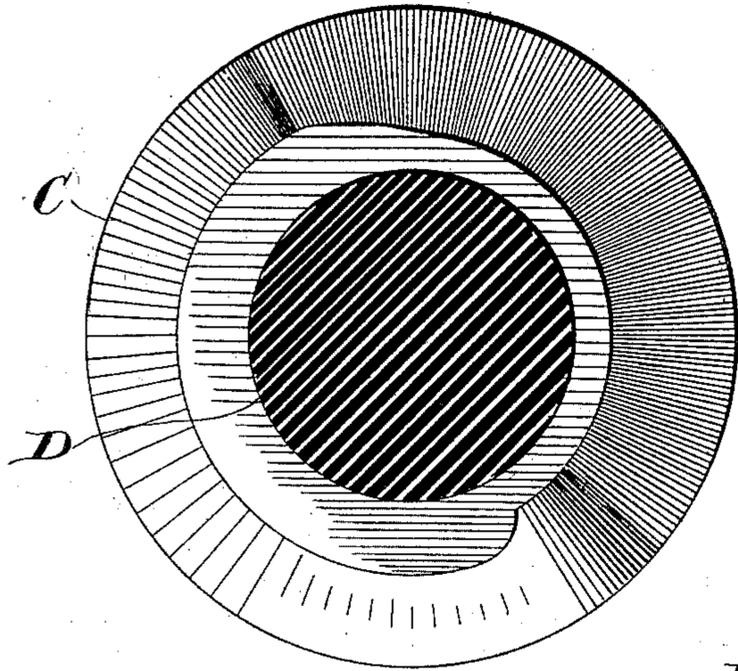
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*Fig. 6.*



*Fig. 7.*



Witnesses

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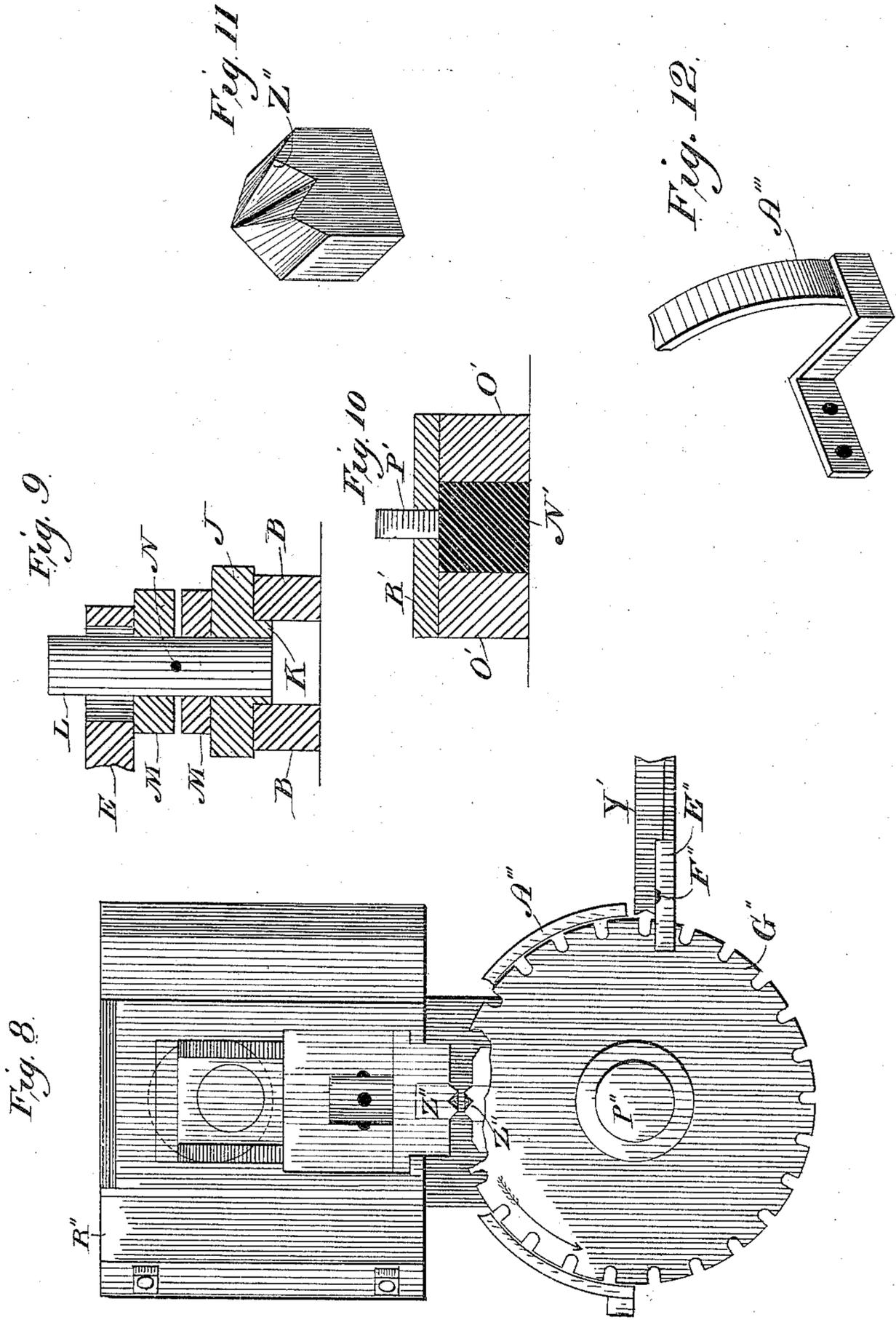
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# UNITED STATES PATENT OFFICE.

JOHN S. FOLLANSBEE, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE  
NEW YORK CITY WIRE NAIL COMPANY.

## WIRE-NAIL MACHINE.

SPECIFICATION forming part of Letters Patent No. 330,219, dated November 10, 1885.

Application filed September 6, 1883. Renewed May 1, 1885. Serial No. 164,058. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN S. FOLLANSBEE, 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 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 manufacturing nails from wire, and has for its object to simplify the construction of machines of this description and reduce the cost of manufacture; and with these ends in view my invention consists in the details of construction and combination of elements hereinafter fully and in detail explained, and then specifically designated by the claims.

In order that those skilled in the art to which my invention appertains may understand more fully how to make and use my improvement, I will proceed to describe the construction and operation of the same, referring by letters to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of my improvement; Fig. 2, an end elevation of the same; Fig. 3, a detail view illustrating the cutting and heading mechanism; Fig. 4, a section taken at the line *xx* of Fig. 1; Fig. 5, a detail view showing the manner in which the cutter is secured to the plate which carries it; Fig. 6, a detail side elevation of the carrier-wheel and pointing-dies and means for operating them. Fig. 7, is a detail view illustrating the double-acting cam; Fig. 8, a detail front view showing the relative position of the pointing-dies and the carrier-wheel; Fig. 9, a section through the line *yy* of Fig. 1; Fig. 10, a section through the line *zz* of Fig. 1; Fig. 11, a detail perspective illustrating the shape of the pointing-dies, and Fig. 12 a detail perspective of the band which extends partially around the carrier-wheel.

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

A is the bed-plate, and B B raised portions at the rear end thereof, forming guideways.

C is a cam arranged on the shaft D, and constructed, as shown at Fig. 7, so as to have a double function—namely, to operate at the side and at the face, as will be presently explained. 55

E is a lever pivoted near its center to a block, F, so as to swing freely in a horizontal plane. This block in turn is pivoted between the standards G, projecting from the bed-plate, by means of screws H, so that said block may have a rocking motion in a vertical plane, which motion will of course be communicated by the lever E. At one end of this lever is attached in any ordinary way, or cast integral therewith, a downwardly-projecting lug, I, which is adapted to rest upon the face of the cam C. 60

J is a traveler, having a rib, K, on its bottom (see Fig. 9,) adapted to slide within the guideways B. Rigidly secured to this traveler is a spindle, L, over which are placed disks M in such manner as to move freely up and down. An opening, N, is made through the spindle to admit the wire between the disks, as will be presently explained. The other end of the lever E is placed over the spindle immediately upon the upper disk. The lug I is kept in constant contact with the side of the cam C by means of a spring, O, attached to the lever E and pin P. As the shaft D revolves the face of the cam will operate to raise that end, which I will term the "heel" of the lever, resting on it through the medium of the lug I, thereby depressing the other end and causing the disks M to act as jaws and close upon the wire, so as to hold it fast. The side of the cam now throws the heel of the lever backward, thereby causing the forward end to swing forward, carrying with it, of course, the traveler and disks, and consequently the wire. The position of the mechanism and parts so far described is now such as shown at Fig. 1. As the shaft D continues to revolve the cam C will cease to operate the lever E, and the latter will be returned to its normal position by means of the spring O. By this latter movement the disks M will be carried back over the wire. 85

Q is a lever pivoted by the pin R, and with its heel end resting against a cam, S, on the shaft D. T is a screw passed through the forward extremity of this lever, so as to project 95

downward below the lever. When the wire has been fed forward by the action of the lever E, the cam S will raise the heel of the lever Q and cause the forward end to be depressed, and thereby bring the screw T down upon the wire, so as to keep the latter from being carried backward by the friction of the disks during their return movement. The screw T may be adjusted in and out, thereby varying the pressure on the wire, or compensating for any wear. U is an ordinary set-screw passed through a bearing, V, between the guideways B, and by the adjustment of said screw the play of the traveler J is regulated to determine the amount of wire to be fed at each forward movement.

W is a presser-bar pivoted between the standards X, and having at its heel end an ordinary cam-ball, Y. This ball forms the extremity of the spring-arm Y''', which is bolted or otherwise secured at the other end to the under side of the presser-bar.

Y'''' is an ordinary adjusting-screw operating against the upper surface of the cam-ball; for the purpose of throwing the latter more or less within the field of action of the cam-wheel Z on the shaft D, as will be seen by reference to Figs. 1 and 4.

A' is a clamp-bar bolted at one end to the bed-plate, as seen at Fig. 4, and provided at the other extremity with a downwardly-projecting lug, B', which extends immediately over the path of the wire. The upper forward portion of the clamping-bar and the lower forward portion of the presser-bar are provided with recesses C', curved in cross-section, and within these recesses is placed a connecting-plate, D'; so that it will be readily understood that any motion of the presser-bar in a vertical plane will be communicated to the clamp-bar. As the cam Z revolves it will operate the cam-ball Y, and thereby throw the forward end of the presser-bar downward, which will cause the clamp-bar to be forced against the wire, as shown in Fig. 4. When the cam Z has ceased to act on the presser-bar, the latter will return to its normal position by gravity, while the resiliency of the clamp-bar will return the latter, and thereby insure the retention of the connecting-plate. Should a greater or less pressure be desired, this may readily be accomplished by the adjustment of the screw Y''''', as will be readily understood.

E' F' are arms pivoted at G', so as to form a toggle-joint. The extremity of the arm E' is pivoted to an adjustable block, H', secured to the bed-plate by a bolt, I', passing through an elongated slot, J'. The arm F' is pivoted to a block, K', arranged to slide in guideways in the bed-plate in any ordinary way.

L' is the tool for forming the heads on the nails, and is secured to the block K', as shown. The end of this tool may be made similar to any ordinary shaped head, or it may be flat; but of course this depends on the shape of the head desired.

M' is a link pivoted at G', and also to what

I term a "plunger-rod," N', so as to form a connection between the arms E' F' and said rod, for the purpose presently explained. This plunger is confined as against lateral play by means of guideways O', (see Fig. 10,) and is provided with a lug, P', which projects upward through an elongated slot, Q', in a plate, R', the latter being securely fastened to the bed-plate.

The plunger is operated by a cam, S', on the shaft D, as follows: As the shaft revolves the said cam will strike against the plunger, force it forward, and thereby cause the arms E' F' to straighten out and drive the heading-tool L' against the wire, as will be presently explained.

By manipulating the adjusting-screw T' a greater or less throw may be imparted to the heading-tool, as the case may be.

U' is a spring bearing against the link M', as shown, and serves to return the plunger and arms to their normal position.

V' is a plate arranged to slide within ways W' on the bed-plate. Secured on the plate V', at the forward extremity thereof, are the cutting-tool X' and push-out Y'. These are held in position by means of caps Z' secured by screws, as clearly shown at Figs. 3 and 5.

A'' are set-screws passed through the raised portion B'' of the plate against the cutting-tool and push-out, by means of which the latter may be adjusted to compensate for wear, or for other obvious purposes.

C'' is a projection attached to or cast integral with the plate V', and is operated by the cam D''.

E'' E'' are raised portions of the bed-plate, having grooves F'' for the wire. These raised portions also form guideways for the cutting-tool and push-out, and prevent any unsteadiness or unnecessary wobbling of the same. When the cam D'' strikes the projection C'', the cutting-tool and push-out will be forced forward, thereby causing the wire to be severed and be pushed by the cutter and push-out from out the supports E'' into the carrier-wheel G''. The spring H'' serves to return the plate V' to its normal position.

I'' is a cog on the shaft D, and meshes into a cog-wheel, J'', journaled within the bed-plate. This latter wheel has a beveled gear on its face, which meshes into a beveled gear, K'', arranged on the short shaft L''. (See Figs. 1 and 2.)

M'' is a wheel on the shaft L'', and having on its periphery a short worm or track, N'', which operates the wheel O'' in the ordinary way, each complete revolution of the wheel M'' causing the worm to act on one tooth of the wheel O'', so that the motion of the latter is intermittent. The wheel O'' is attached to the shaft P'', which is journaled within the standard Q'', bolted to the bed-plate, and secured to the other extremity of this shaft is the carrier-wheel G'', whose function and operation will be presently explained.

Bolted to the bed-plate, or cast integral

therewith, is an upright post, R'', having therein dovetailed bearings, as clearly shown at Fig. 1. Extending laterally from this post is a bearing, S'', through which is journaled the shaft T''. A rocking motion is imparted to this shaft by means of a rod, U'', attached to a crank-pin, V'', on the wheel W'', arranged on the shaft D, the other extremity of the rod being similarly attached to a crank-arm, X'', (see Figs. 1, 2, and 6,) the rod U'' being of course attached to the crank-arm X'' at a point farther from the axis of the shaft T'' than the distance of the pin V'' from the axis of the shaft D. Within the dovetailed bearing in the post R'' is a die-box, Y'', arranged to slide freely in a vertical plane, and operated by an eccentric actuated by the movement of the shaft T''. The operation and construction of the mechanism for imparting motion to the die-box is so old and well known, being common to nearly every machine-press, that I will not enter into any description of the same.

Cutting-dies Z' Z' are secured one within the die-box and the other immediately below upon the post R'', as clearly shown at Figs. 6 and 8. The shape of the dies is illustrated at Fig. 11; so that it will be readily understood that when a nail is placed between them the upper die will force the wire down against the lower die so that the latter will cut through the wire, the upper die meantime performing a similar function, the result being that the nail is pointed.

The carrier-wheel G'' is arranged on the same shaft with the wheel O'', so that the intermittent motion of the latter will be imparted to the said carrier. A band, A''', secured to the post R'', as shown at Fig. 6, extends upwardly around the carrier-wheel, close to the periphery thereof, to the point where the cutter and push-out force the nail within the recesses within the said wheel, (see Fig. 8,) the object of this being to prevent the nails from falling out during the revolution of the wheel until they have been carried around to a suitable position, from whence they may drop by gravity into any receptacle. When the nails are forced within the carrier, they project laterally therefrom, as seen at Fig. 6. As the carrier revolves the inner or point end of the nail rides up the inclined side of the lower die, Z'', and falls into the said die in the

proper position so that when the upper die descends the nail may be pointed, as hereinbefore set forth.

The operation of my improvement is as follows: The wire is run through any ordinary wire-straightener and then guided into the opening N between the disks M. As the shaft D revolves the wire will be fed forward by the action of the lever E. The presser-bar W and clamp-bar A' operate as soon as the lever commences to return to its normal position. When the wire has been clamped by said presser and the clamp, the cam S' operates the plunger N', thereby causing the heading-tool L' to strike the end of the wire and form a head thereon. The cam D'' strikes the projection C'' and forces the cutting-tool and push-out forward, thereby severing the wire and pushing the severed portion forward into one of the recesses in the carrier-wheel. The latter revolves step by step, as hereinbefore described, and carries the nails up into the proper position between the cutting-dies Z'', which point the nails, as set forth.

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

1. The shaft D, carrying cams C Z D' S' and wheel W'', in combination with the feeding, clamping, cutting, and push-out and heading mechanisms, rod U'', and means for pointing the nails, substantially as described.

2. The die-box arranged to slide vertically within supporting-posts, in combination with shaft T'', rod U'', crank-pin V'', and shaft D, substantially as set forth.

3. The die-box and pointing-dies, in combination with the shaft T'', rod U'', crank-pin V'', shaft D, carrying cams C, S, D'', and S', and the feeding, clamping, heading, and cutting mechanisms, substantially as hereinbefore set forth and described.

4. The carrier-wheel recessed in its periphery, in combination with the wheel O'', wheel M'', having worm N'', band A''', and pointing-dies Z'', substantially as described.

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

JOHN S. FOLLANSBEE.

Witnesses:

F. W. SMITH, Jr.,  
S. S. WILLIAMSON.