

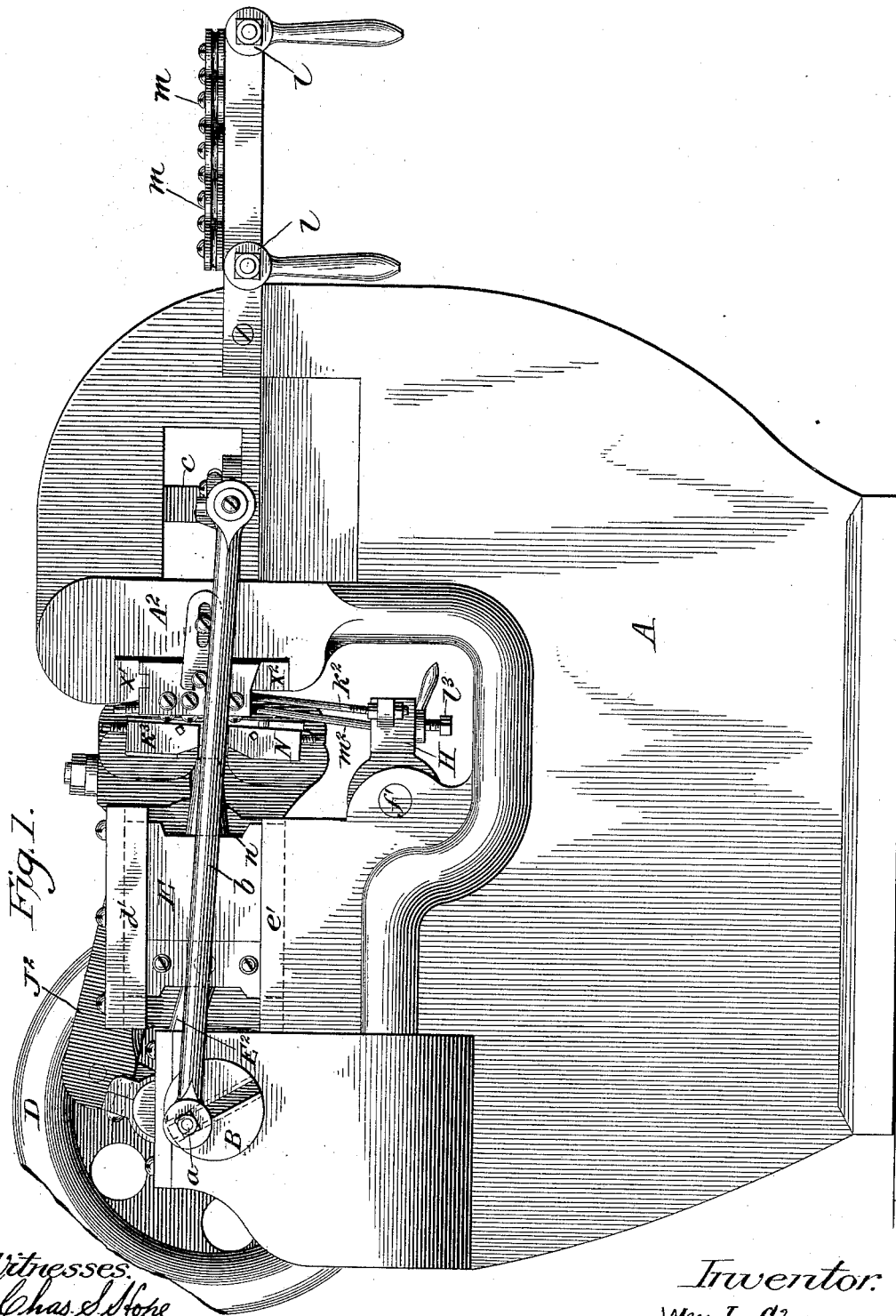
(Model.)

5 Sheets—Sheet 1.

W. L. CLOUSE.
WIRE NAIL MACHINE.

No. 422,918.

Patented Mar. 11, 1890.



Witnesses.
Chas. S. Hope
J. N. Clouse

Inventor:
Wm. L. Clouse
By J. N. Clouse Atty.

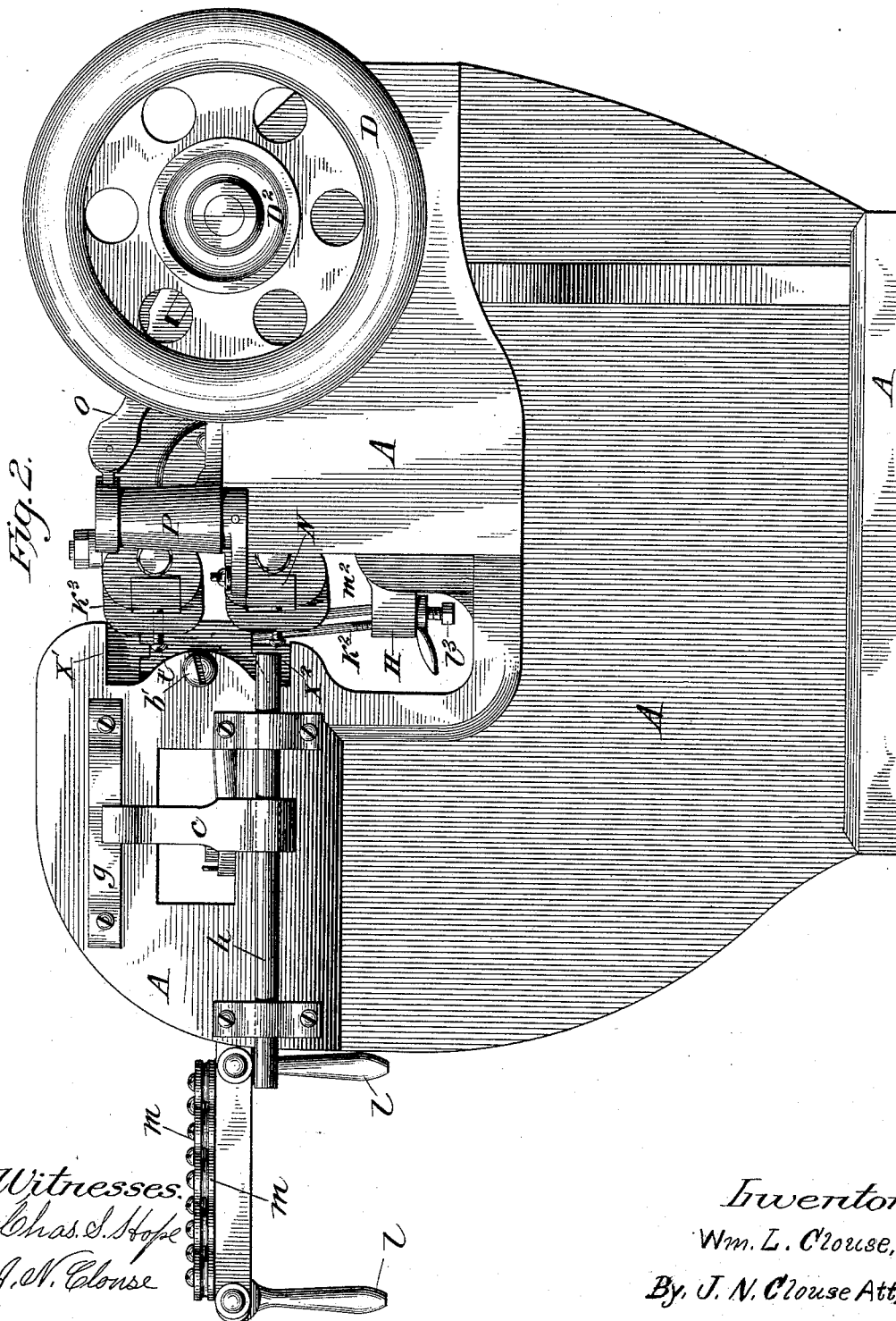
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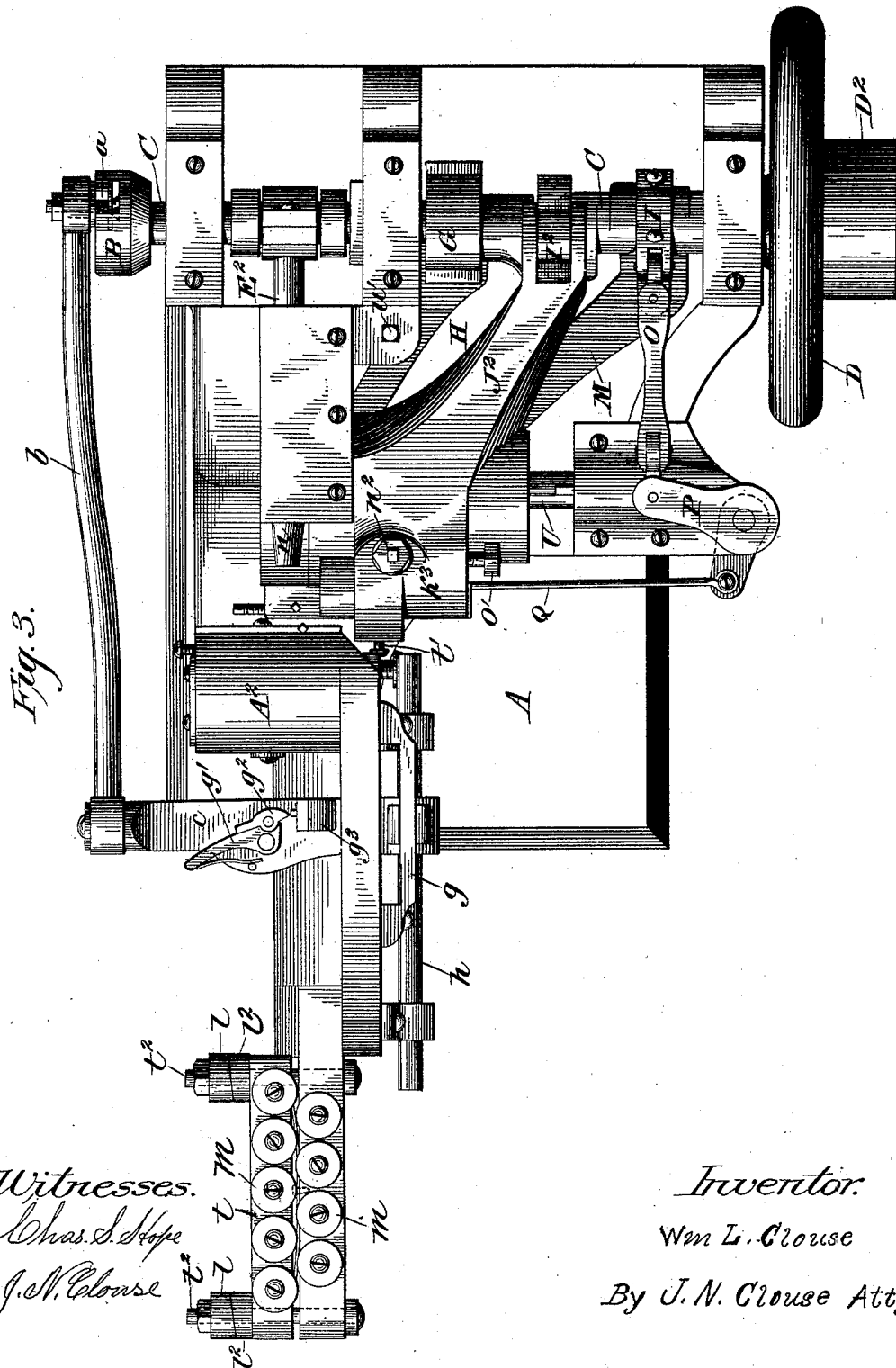
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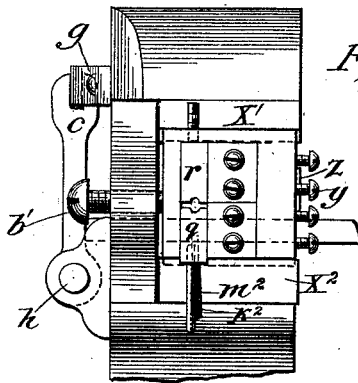
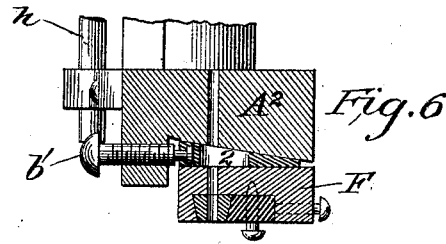
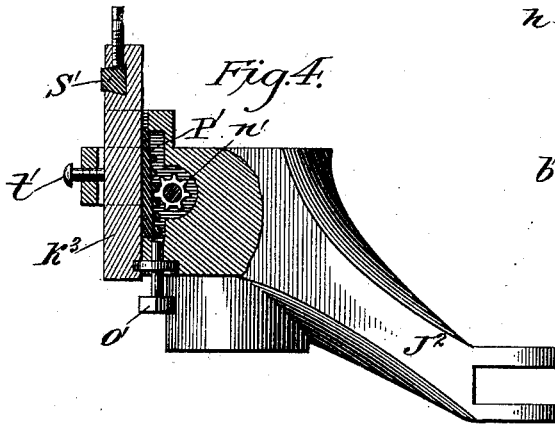


Fig. 5.

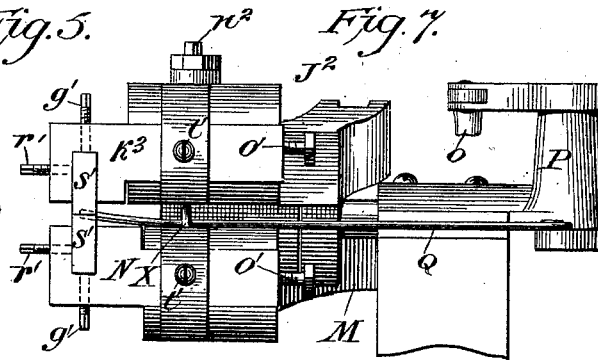


Fig. 7.

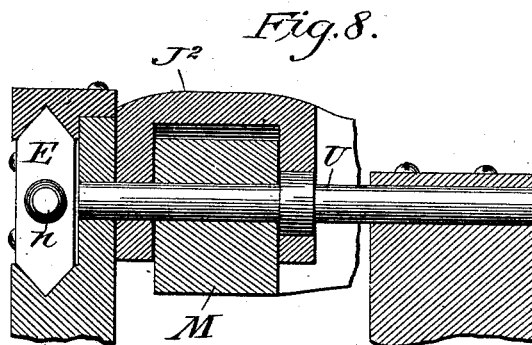


Fig. 8.

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Fig. 9.

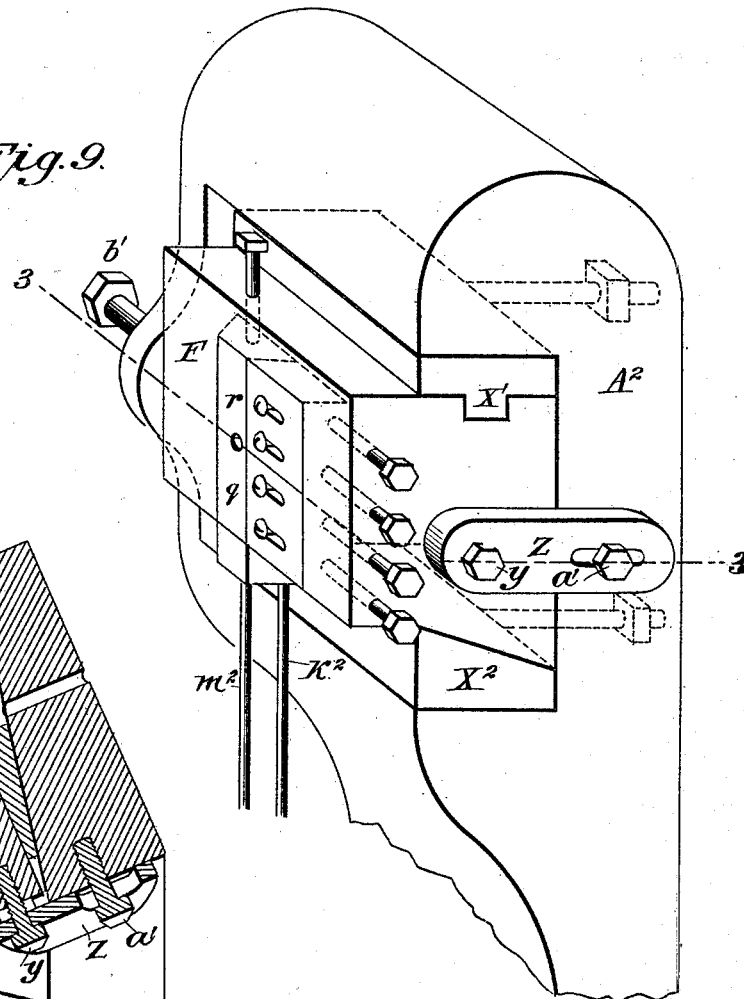
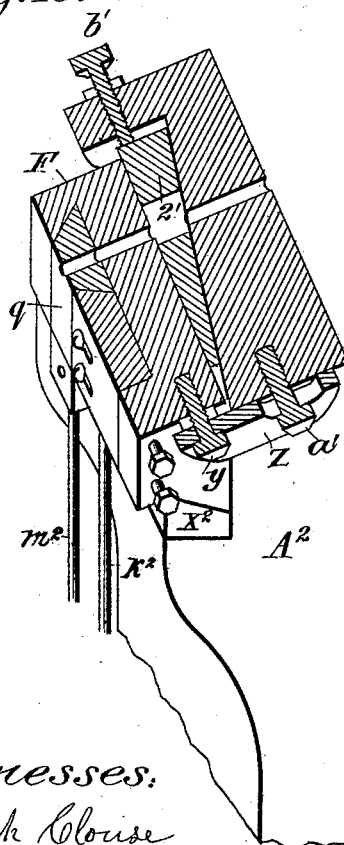


Fig. 10.



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UNITED STATES PATENT OFFICE.

WILLIAM L. CLOUSE, OF TIFFIN, OHIO.

WIRE-NAIL MACHINE.

SPECIFICATION forming part of Letters Patent No. 422,918, dated March 11, 1890.

Application filed June 24, 1889. Serial No. 315,445. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM L. CLOUSE, a citizen of the United States, residing at Tiffin, in the county of Seneca and State of Ohio, have invented new and useful Improvements in Wire-Nail Machines, of which the following is a specification.

My invention relates to improvements in wire-nail machines, such machines as are designed for the making of plain or barbed wire nails with large or small heads; and the objects of my improvements are to simplify the construction of machinery for that purpose, to make machines that may be run at a higher speed and thus make nails faster, to construct machines the wearing parts of which can easily be replaced and adjusted, and also to construct machines by which, by the changing of dies and grip-jaws and the adjusting of the feed, several lengths of nails may be made of several different gages of wire on the same machine. I attain these objects by the mechanism illustrated in the accompanying drawings, in which, standing in front of the machine—

Figure 1 is a left-hand-side side elevation of the machine. Fig. 2 is a right-hand-side side elevation of the machine. Fig. 3 is a top or plan view of the machine. Fig. 4 is a detail view of a part of the machine, showing one of the arms that carry the cutting and pointing dies, a part of which is represented in a section, which shows a horizontal longitudinal section of one of the cutting-dies with its pinion and wedge-rack for the adjustment of the cutting and pointing dies. Fig. 5 is a face view of the grip or heading dies—a detail of the machine. Fig. 6 is a detail horizontal section of the anvil-block, taken on the plane of the line of the machine, which is the line of the center of the wire when it is in the proper working position in the machine, showing the gripping-die on the one side and the die-block with its adjusting wedge and screws. Fig. 7 is a detail view showing the face of the jaws holding the cutting and pointing dies and the pivot of the same, also showing the picker and cleaner with its crank movement. Fig. 8 is a detail sectional view showing the hinge or joint of the cutting and pointing die arms and the bearings of its pivot, also showing the cross-head or hammer-stock carrying

the hammer. Figs. 9 and 10 are additional detailed views illustrating the construction of the die-block and its co-operating parts, in all of which views like letters refer to like parts.

A is a bed plate or frame, to which the various parts of the machine are pivoted or otherwise attached.

The various operations performed by the machine in the making of a nail are performed by a single shaft C, arranged at the rear of the machine in suitable bearings for the same, and the operation of making a nail is completed by a single revolution of the shaft C. This shaft C is provided with a balance-wheel D and pulley D².

The different operations performed by the different movements of the machine while the shaft C is being turned one revolution are, first, straightening the wire; second, the feed which gives the length to the nail; third, gripping the wire to form the head of the nail; fourth, the movement of the hammer to form the head of the nail; fifth, the cutting and pointing, and, sixth, the movement of the picker and cleaner, which completes the round, and then the same is repeated at each revolution of the shaft while the machine is in motion and the wire fed into it.

The wire w^2 passes between a series of groove-faced rollers $m m$, the two lines of which are adjusted to or from each other by means of the eccentric-headed levers $l l$ and their eccentric nuts or washers $l^2 l^2$, against which they act, one of the roller-bars t being loose on the studs $t^2 t^2$.

c is a sliding feed-arm, which is fixed to the rod h , which slides in boxes on the bed frame or plate A, one arm of which slides on a bar g and is provided with a double pawl-dog g' and g^2 , which holds the wire w^2 firmly against a fixed jaw g^3 on the feed-arm c , thus causing the feed-arm c to move the wire forward and give the desired length for the nail by drawing the wire through the straightening-rollers $m m$. The double pawl-dog has the pawl g' pivoted to the feed-arm c and supported by a spring, and to the forward end of it is pivoted a smaller grip-dog g^2 , which bites on the wire w^2 at an oblique angle by pressing it against a chisel-edge on the fixed jaw g^3 on the feed-arm c . To the arm c a connecting-rod b is

pivoted, the other end of which is provided with a wrist-pin a , which is made adjustable in a slotted crank-disk B on the end of the shaft C. The adjustment of the wrist-pin in the crank-disk B serves to lengthen or shorten the feed which gives length to the nail.

The wire w^2 , when in proper position in the machine to be worked into nails, passes through the anvil-block A^2 , through the adjusting-wedge 2, and through the die-block F, which carries the grip-dies r and q . These grip-dies consist of an upper die r , which is adjusted by a screw from above, and a movable die q below, which rests upon a push-pin m^2 . This pin is adjusted by the screw l^3 in the lever H. Said lever H is pivoted at f' , supported by a spring and operated by the cam G on the shaft C. The hook k^2 is designed to draw the die q back and open the dies after the operation of heading the nail is performed. Said operation is as follows: n is a hammer secured in a cross-head E, which works between the slides d' and e' , and is driven by the pitman E^2 , which connects it with a crank on the shaft C. (See Fig. 1.) By the operation of these parts the head is formed by actual pressure, which amounts to a blow by the rapid motion of the machine.

The operation of pointing the nail and squaring the end of the wire to receive another head is accomplished by means of the double cranks on the shaft G, which operate the pitmen or arms I I^2 , one end of which is pivoted to or journaled onto the cranks of the shaft C, and the other ends are pivoted to the levers J 2 and M, which levers have a common center pivot or shaft U, on which they move. They extend out also on the opposite side of the pivot U with a short arm, each of which arms is provided with knife-blocks K 3 and N, each having a lateral and K 3 a face adjustment, the face adjustment, or that in the line of the axis of the machine, being made by the wedge-rack P' and pinion n' , operated by the pinion-bolt n^2 , and, further, the collar-bolts O' O', as shown, are screwed into the arms, and are provided with collars which work in a groove in the knife-blocks K 3 and N and give to them a lateral adjustment.

The cutting dies or knives S' are inserted in a dovetailed groove in the knife-block, and are held by set-screws $g' g'$ and $r' r'$.

The picker or cleaner consists of a bar Q, held near its inner end by a loop X to the arm or lever M. The other end is pivoted to a bell-crank P, the pivot of which is secured to a bracket on the frame. The bell-crank P is also pivoted to a connecting-rod O, which receives a motion from its connection to the arm I 2 on the crank-shaft C. A slight motion of the bar Q serves to remove the chips or the nails that may chance to stick in the cutting and pointing dies.

The bed-frame A is made of such a special construction and shape as to especially adapt it for conveniently attaching the working parts, and especially for strength, compact-

ness, and handiness as a machine to work about in the making of nails.

I am aware that nail-machines have been constructed and patented by which a finished wire nail has been made by successive operations in the same machine; but the special construction of a bed-frame adapted to and making the construction of such a machine possible, the performing of the various operations in the same machine by cranks on a single shaft, and the special construction, arrangement, and working relations of the parts performing the different operations of the machine, as herein described and illustrated, I believe to be new and claim as my invention.

The more minute and detail description of the machine is as follows: The bed-frame consists of a lower horizontal plate, from which rises a vertical web or plate extending lengthwise of the machine, from which extend out cross-brace webs, which terminate above in a double-curved plate, from which rise the boxes, bearings, lugs, anvil-block, &c., to which the various working parts of the machine are attached. In the die-block F the upper edge is gained out to receive the lock-plate X', which terminates in a bolt that passes through the anvil-block A^2 ; and the lower edge of the die-block F terminates back in a ribbed bevel portion, to which the beveled gib-block X 2 fits, which also terminates in a bolt that passes through the anvil-block A^2 . The wedge 2 forms a solid backing for the die-block F, and by means of the screw b' also forms a face adjustment for it, while the collar-bolt Y and plate Z form a lateral adjustment for the die-block F. The lower half of the grip-dies is forced up to make the grip by the push-pin m^2 and is drawn back by the hook k^2 , the force being applied to the pin m^2 by means of the lever H, which is pivoted at f' and is operated by the cam G on the shaft C. The motion of the lever H is limited by the spring V' below and the stop-bolt U' above. The lever H is held up also to the cam G by the spring V'. The adjustment for the lift or drop of the push-pin m^2 is made by the set-screw l^3 in the short arm of the lever H. The pivot-pin f' of the lever H lies horizontal, thus allowing the roller in the end of the lever H to travel on the face of the cam G on the shaft C. The stop-bolt U' limits the opening of the dies, and the set-screw l^3 gives the required grip.

The operation of cutting and pointing is accomplished by the arrangement of double cranks on the shaft C, to which are attached pitmen or arms I I^2 , which are attached also to the levers J 2 and M, the angle at which the cranks are placed to each other being such that both cranks will center at right angles to their levers. The levers J 2 and M are hinged or pivoted on a common center in the form of a double box-hinge, as shown in Fig. 8, the lever J 2 having two bearings and the

lever M one. The shaft or pivot U is provided with an enlargement in the form of a collar to take up the lateral slack or looseness in the joint of the same. The heads or shorter arms of the levers J² and M are arranged so as to attach to them the adjustable knife-blocks K³ and N, in which the movable cutting and pointing dies are secured by set-screws.

10 The knife-blocks have two adjustments—one in the line of the machine and a lateral adjustment. The one in the direction of the line of the axis of the machine is accomplished by means of the pinion-bolt and pinion n', working in the rack on the wedge P' against the set-screw t'. The lateral adjustment is made by the collar-bolt O', screwed into the arms of the levers J² and M, the collars working in grooves in the knife-blocks K³ and N, as shown in Fig. 7.

The picker or cleaner, which performs the office of cleaning the dies of nails or chips that may stick to them, has in its parts a bar Q, a portion of which near the end is turned up at a slight angle, which end in its movement traverses the space between the cutting-dies. Said bar is loosely held to the lower arm of the lever M by a loop X. The other end of the bar is connected to one arm of a bell-crank R, which is pivoted to a bracket on the bed-frame. The other arm of the bell-crank is pivoted to a connecting-rod O, which is also pivoted to the arm I² and receives its motion from the crank C. By the motion of the arm I² the end of the bar Q receives a forward movement, and by its loop-connection X with the arm of the lever M it receives a downward movement, and the combination of these two motions causes the end of the bar Q to describe a circular or elliptical path, according as the relative lengths of the arms producing the motions are changed to each other.

Having thus described and illustrated my invention in such a manner that one skilled in the arts could make and operate the same, what I claim as new, and desire to secure by Letters Patent, is—

1. In a wire-nail machine, a frame A, comprehending a lower horizontal base, from which rises a vertical web-plate extending lengthwise of the machine, from which extend out cross-brace web-plates, which vertical and web plates terminate above in a double-curved plate, from which rise the boxes, bearings, lugs, anvil-block, &c., to which the va-

rious working parts of the machine are attached, as described and specified.

2. In a wire-nail machine, the combination of the die-block F, the lock-plate X', and gib-block X², provided with shanks for nuts, and the anvil-block A², with the wedge 2 and screw b', and the collar-bolt g, screw a', and plate Z, as described and specified.

3. In a combination of parts to operate the lower grip-die, the push-pin m², hook k², lever H and pivot f', set-screw l², a spring stop-screw U', roller in lever H, and cam G, substantially as set forth.

4. In a wire-nail machine, the double cranks on the shaft C, in combination with the connecting-arms I I² and the levers J² and M, to operate cutting and pointing dies, as described and specified.

5. The levers J² and M, hinged on a common center, in combination with the collared shaft U and its bearings, as shown and specified.

6. The levers J² and M, hinged on a common center, in combination with the knife-blocks K³ and N and their adjusting parts, the pinion-bolt and pinion n', together with its wedge and rack P', screw t', and collar-bolts O' O', substantially as and for the purpose specified.

7. In a wire-nail machine, the combination of parts composing a picker or cleaner, consisting of the bar Q, held by the loop X on the lever M, the bell-crank P, and connecting-rod O, pivoted to the arm I² and operated by the crank on the shaft C, all substantially as and for the purpose set forth.

8. In a wire-nail machine, the combination of the connecting-arms I I² with the levers J² and M and the knife-block K³ and N, to operate cutting and pointing dies, as described and specified.

9. In a wire-nail machine, the picker or cleaner bar Q, operated by the lever M and the arm I² through the bell-crank P, as described and set forth.

10. In a wire-nail machine, the combination of the bed-frame A, crank-shaft C, levers J² and M, and collared shaft U, substantially as described and specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

W. L. CLOUSE.

Witnesses:

JOHN A. DOMANN,
GEO. E. SCHROTH.