2 Sheets—Sheet 1.

W. H. FIELD.

Nail-Plate Feeder.

No. 197,547. **Patented Nov. 27, 1877.**

Fig. 2

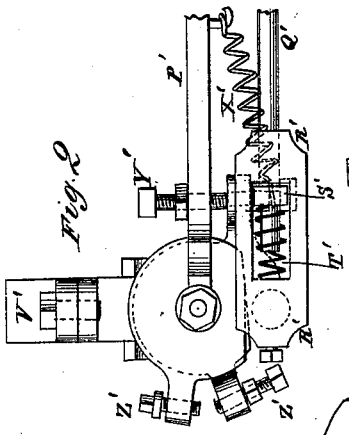


Fig. 3

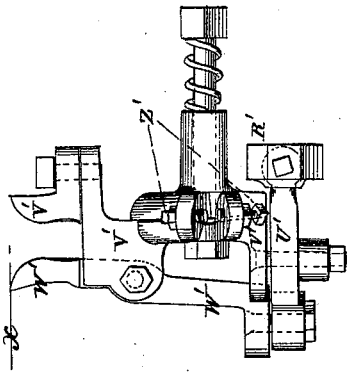
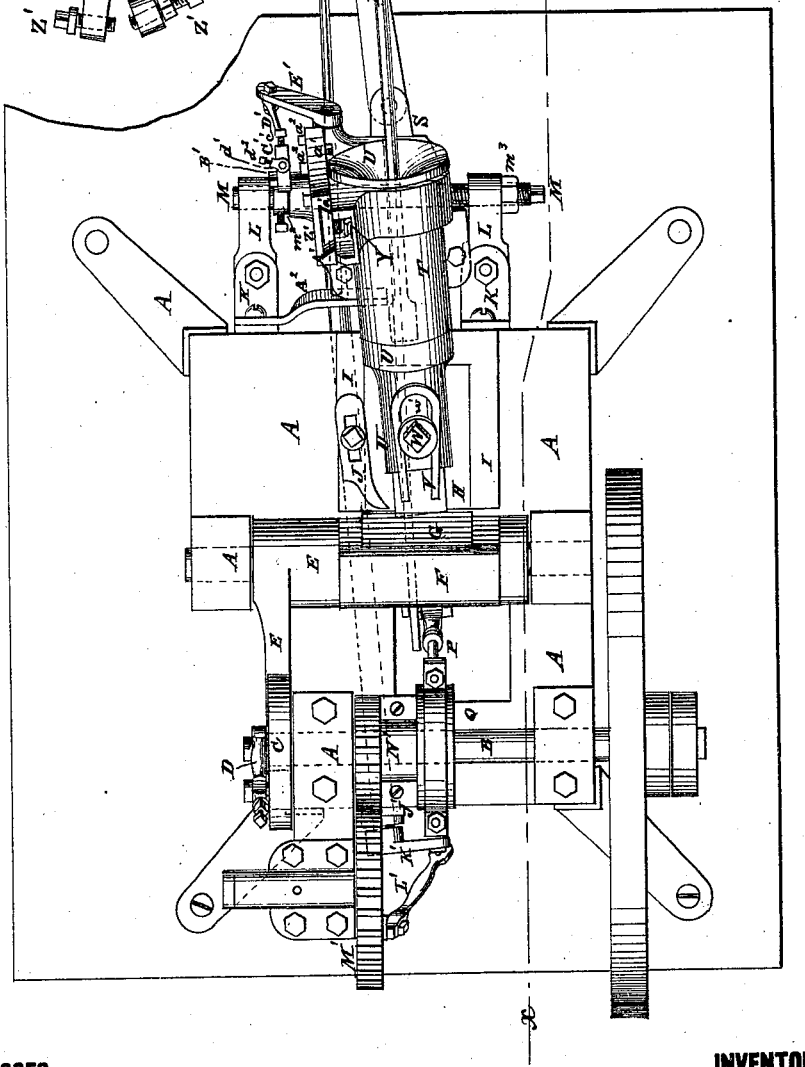


Fig. 1



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2 Sheets—Sheet 2.

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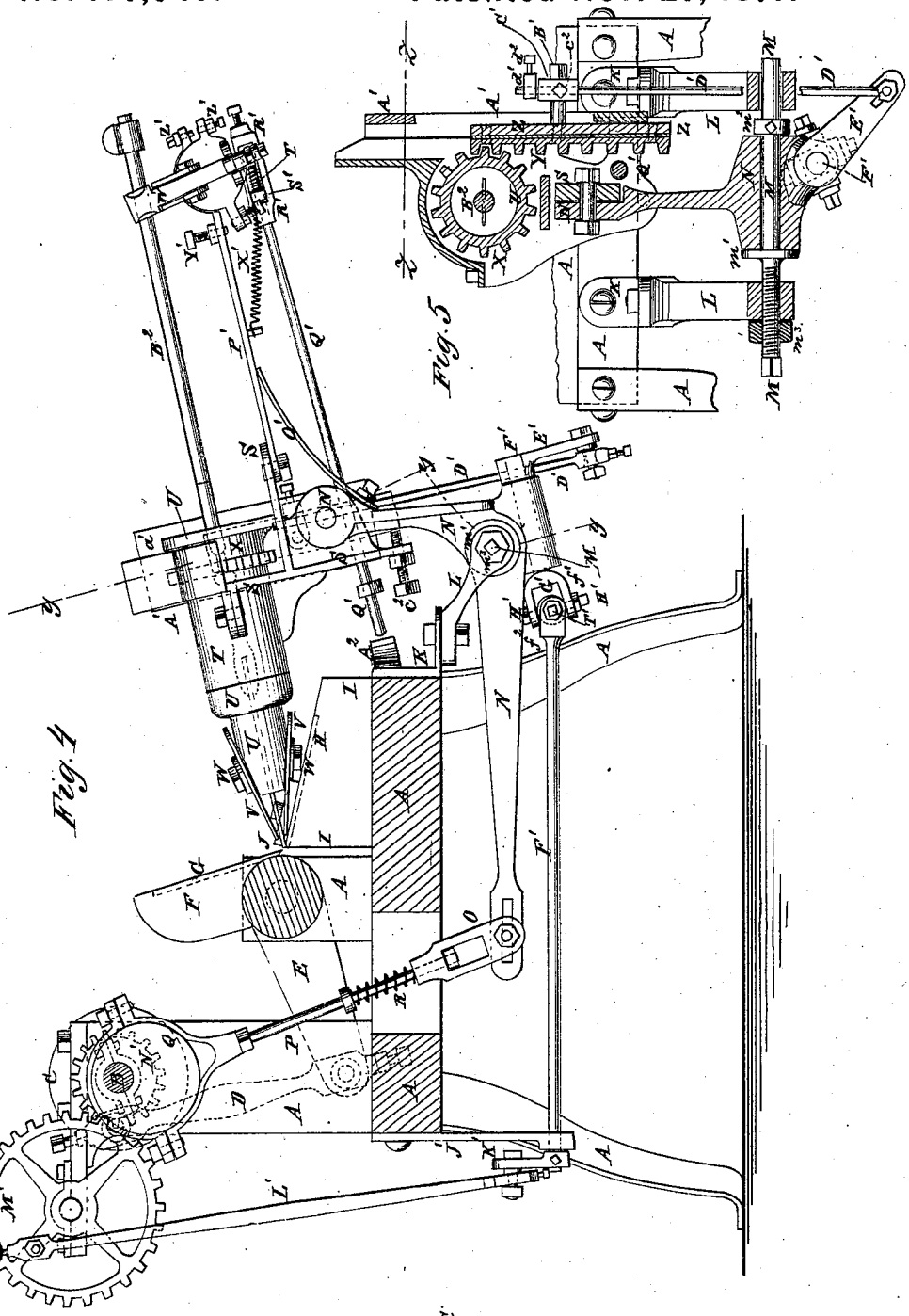

Fig. 4

Fig. 5

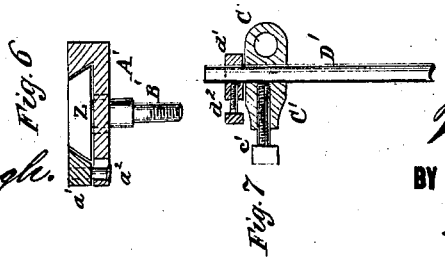

Fig. 6

Fig. 7

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UNITED STATES PATENT OFFICE.

WILLIAM H. FIELD, OF TAUNTON, MASSACHUSETTS.

IMPROVEMENT IN NAIL-PLATE FEEDERS.

Specification forming part of Letters Patent No. **197,547**, dated November 27, 1877; application filed August 18, 1877.

To all whom it may concern:

Be it known that I, WILLIAM HENRY FIELD, of Taunton, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Nail-Plate Feeder, of which the following is a specification:

Figure 1, Sheet 1, is a top view of my improved machine. Fig. 2, Sheet 1, is a detail side view of the rear part of the feeder. Fig. 3, Sheet 1, is a rear view of the same. Fig. 4, Sheet 2, is a vertical longitudinal section of the same, taken through the line *x x*, Fig. 1. Fig. 5, Sheet 2, is a detail cross-section of the feeder, taken through the broken line *y y y*, Fig. 4. Fig. 6, Sheet 2, is a detail section, taken through the line *z z*, Fig. 5. Fig. 7, Sheet 2, is a detail section of the turning-rod attachments.

Similar letters of reference indicate corresponding parts.

The object of this invention is to improve the construction of the nail-plate feeder for which Letters Patent No. 171,005 were issued to me, December 14, 1875, so as to make it more convenient in use, more reliable and accurate in operation, and less liable to get out of order or to need adjustment.

The invention will first be described in connection with the drawing, and then pointed out in the claims.

A represents the frame of a nail-machine, to which is pivoted the driving-shaft B.

Power is applied to one end of the shaft B, and to its other end is attached a crank-wheel, C, to the crank-pin of which is pivoted the upper end of a connecting-rod, D. The lower end of the rod D is pivoted to the crank-arm E, attached to the holder F of the movable cutter G, between which and the stationary cutter H the plates are cut into nails. The stationary cutter H is secured to a holder, I, attached to the table of the machine. To the holder I is attached a gage or stop, J, to regulate the position of the nail-plate.

To the front of the machine are bolted the upper arms of the knees, right-angled bars or brackets K, the said bolts passing through holes in the said arms, so that the feeder can be raised and lowered as may be required.

To the ends of the horizontal arms of the brackets or angle-bars K are bolted the upper ends of the arms L. The outer arms of the brackets K may be slotted longitudinally with the length of the machine to receive the bolts, so that the feeder may be moved toward or from the said machine.

The upper ends of the arms L may be slotted transversely with the length of the machine, so that the feeder can be moved laterally to adjust it with reference to the gage J. The lower ends of the arms L are perforated to receive the pin M, which passes through the angle or bend of the bent lever N, and carries the whole feeder, and forms a bearing for the feeder to move backward and forward upon as it is moved by the lever N.

The pin M is provided with a stationary collar, m^1, upon one side of the lever N, and with a movable collar, m^2, secured by a set-screw, upon the other side of said lever N. The pin M passes loosely through one of the arms L, and has a screw-thread formed upon its other end, is screwed into a screw-hole in the other arm L, and is secured in place by a lock-nut, m^3, screwed upon the said end.

The screw end of the pin M is squared off to receive the wrench for convenience in screwing it in and out.

The end of the lower or long arm of the lever N is slotted longitudinally to receive the bolt by which it is pivoted to the socket O. The socket O is slotted longitudinally to receive the nut into which the end of the rod P is screwed.

The upper end of the rod P is connected by a strap to an eccentric, Q, attached to the driving-shaft B, so that the lever N may be vibrated by the revolution of the said shaft B.

Upon the lower part of the rod P is placed a spiral spring, R, the lower end of which rests against the end of the socket O, and its upper end rests against a collar or shoulder attached to or formed upon the said rod P.

The spring R is made of such a strength as to hold the rod P and socket O extended under ordinary circumstances, but should the feeder meet an obstruction the said spring R will yield, and allow the rod P to be pushed into the socket O to prevent the machine from being broken by the continued revolution of the eccentric Q.

Upon the end of the upper arm of the lever

N is formed a circular head, to which is pivoted the circular lug formed upon the outer side of the lower arm of the bracket S.

To the upper arm of the bracket S is attached a sleeve, T, in which works the barrel U. The forward end of the barrel U is flattened upon a taper, so as to guide the nail-plate into proper position to be cut, whatever may be its position when inserted in the other end of the said barrel U.

The springs V, attached to barrel by bolts and washers, are designed to hold the nail-plate in place, and prevent it from being drawn back by the rearward movement of the feeding device.

Upon the rear end of the barrel U is formed a gear-wheel, X, into the teeth of which mesh the teeth of a vertical rack, Y. The rack Y is secured to a plate, Z, by screws, as shown in Fig. 5, to enable a packing to be inserted between the rack Y and plate Z, as may be required to take up the wear and secure accuracy of movement to the barrel U.

The plate Z slides up and down upon a plate, A^1, upon which it is kept in place upon one side by a grooved flange, and upon the other side by a gib, a^1, which is secured by screws a^2 passing through transverse slots in the plate A^1, so that the said gib can be readily adjusted to take up the wear and prevent play.

To the rack-plate Z is attached a stud or bolt, B^1, which passes out through a longitudinal slot in the guide-plate A^1, and upon its outer end works a coupling-block, C^1.

In the coupling-block C^1, and at right angles with the hole for the stud or pin B′, is formed a second hole to receive the turning-rod D′, which is secured in place by a set-screw, c', passing in through the block C^1, and resting against its side, and by the collar d^1 placed upon it at the upper side of the coupling-block C^1, and secured in place by a set-screw, d^2.

The lower end of the rod D′ is pivoted to the crank E′, attached to the forward end of the short part of the crank-shaft F′, which rocks in bearings formed upon the lever N at its angle.

Upon the inner end of the forward part of the shaft F′ is formed a fork, f^1, within which is placed a ball, G′. The ball G′ is secured in place by set-screws H′, which pass through screw-holes in the arms of the fork f^1, and their ends enter recesses in the opposite side of the said ball G′.

In the opposite sides of the ball G′ are formed recesses at right angles with the other two recesses, to receive the ends of the set-screws I′, which pass through screw-holes in the arms of the fork f^2, formed upon the inner end of the rear or longer part of the shaft F′. The set-screws H′ I′ are provided with jam-nuts, to prevent them from working loose.

The outer part of the shaft F′ revolves in bearings in a hanger, J′, attached to the frame A, and to its outer end is attached a crank, K′, which is slotted to receive the crank-pin, so that the throw of the crank may be adjusted as required.

To the pin of the crank K′ is pivoted the lower end of the connecting-rod L′, the upper end of which is pivoted to the crank-pin attached to the gear-wheel M′. The journal of the gear-wheel M′ revolves in bearings attached to a standard of the frame A, and its teeth mesh into the teeth of the small gear N′ attached to the driving-shaft B.

By this arrangement the revolution of the driving-shaft B will rock the barrel U, and reverse the nail-plate as each nail is cut.

The barrel U and the bracket S are held in working position by a spring, O′, which presses against the under side of the rearwardly-projecting arm of the bracket S, or of a bar, P′, attached to said arm by a bolt.

The spring O′ is pivoted to the upper arm of the lever N in such a way that it may be swung to one side to allow the barrel U and the bracket S to be turned back to give convenient access to the knives G H. The spring O′ allows the barrel U to give, should an obstruction occur, and thus prevents breakage.

Q′ is a rod which slides in a hole in a guide-lug attached to or formed upon the side of the bracket S. The outer end of the rod Q′ passes into a hole in the end of the socket-block R′, which is slotted to receive the collar S′ and its set-screw, by which the rod Q′ is kept from being drawn out of the said block, and to receive the spiral spring T′, placed upon the end of the rod Q′, with one end resting against the collar S′, and its other end resting against the block R′ at the outer end of its slot.

To the side of the outer end of the socket-block R′, or in a socket formed in said end, is pivoted the end of a short lever, U′, which is pivoted to the lower part of the jaw V′ of the clamp. The other end of the lever U′ is beveled off, or made cam-shaped, so as to strike against a friction-roller pivoted to the lower end of the other jaw W′ of the clamp, to move the upper end or face of said jaw W′ toward the upper end or face of the jaw V′. The jaw W′ is pivoted to the jaw V′, so that its upper end may be moved toward and from the upper end of the said jaw V′.

The jaw V′ is pivoted to the end of the bar or arm P′, so that the upper ends of the two jaws V′ W′ may be moved toward and from the machine.

The jaws V′ W′ are drawn back by the spiral spring X′, one end of which is attached to the bar or arm P′, and its other end is attached to the lower end of the jaw V′ or to an arm attached to said end.

The rearward movement of the jaws V′ W′ of the clamp is limited by a set-screw, Y′, which passes through a hole in the bar or arm P′, so that its forward end may be struck by an arm formed upon the lower part of the jaw V′.

The forward movement of the jaws V′ W′ of the clamp is limited by the set-screws Z′, one of which passes through a lug formed upon

the end of the bar or arm P′, and the other through a lug formed upon the jaw V′, the said lugs being so formed that the ends of the said screws may strike against each other.

With this construction, as the barrel U is carried forward by the movement of the lever N upon the pin M the inner end of the rod Q′ strikes the spring A^2, attached to the frame A, or some other suitable support, and is pushed outward. The first effect of the outward movement of the rod Q′ is to force the cam end of the lever U′ against the friction-roller of the jaw W′, which causes the said jaw to clamp the nipper-rod B^2 against the other jaw V′. As the rod Q′ continues to move outward the clamp V′ W′ is turned inward upon its pivot, which forces the nail-plate forward in the barrel U for a distance equal to the required breadth of a nail.

The spring A^2 is made of such a strength as to resist the rod Q′ until the clamp V′ W′ has moved forward and the set-screws Z′ have come in contact, and will then yield as the barrel U continues to move forward to complete its stroke. The spring A^2 thus takes up the wear, so that the machine can be used a long time without readjusting the rod Q′. As the barrel U moves outward the rod Q′ is withdrawn from the spring A^2, which releases the clamp V′ W′ and allows the nipper-rod to be turned with the barrel U, and at the same time the spring X′ draws the clamp V′ W′ back into position to again grasp the nipper-rod B^2 and carry it forward. The nipper-rod B^2 has a clamp or nipper attached to its forward end to grasp and hold the nail-plate.

C^2 is a set-screw, which passes through a screw-hole in the lower arm of the bracket S and rests against the upper arm of the lever N, to enable the barrel U and U springs V to compensate for any little variation in the thickness of the cutters G H when changed.

I am aware that it is not new to use two springs on each side of the barrel, but these upper springs require grooves in the barrel to guide them, said grooves weakening the barrel and causing it to break at the end, as well as allowing the butt or waste end of plate to catch in it. Also, (there being two springs on each side of the barrel,) when the ends are worn so as to require adjustment it is very difficult to set the springs correspondingly.

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

1. The combination, with barrel-bracket, of lever N and spring O′, the latter pivoted to the arm of the former, as and for the purpose described.

2. The spring V, constructed in the form of a staple, as and for the purpose specified.

3. The rod P, arranged to slide in socket O, and upheld by a spring, R, as and for the purpose specified.

4. The combination of the rod Q′, the cam-lever U′, the spiral spring X′, the set-screw Y′, the two set-screws Z′, and the spring A^2 with the jaws V W and the bar P′, substantially as herein shown and described.

WILLIAM HENRY FIELD.

Witnesses:
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N. BURNS.