

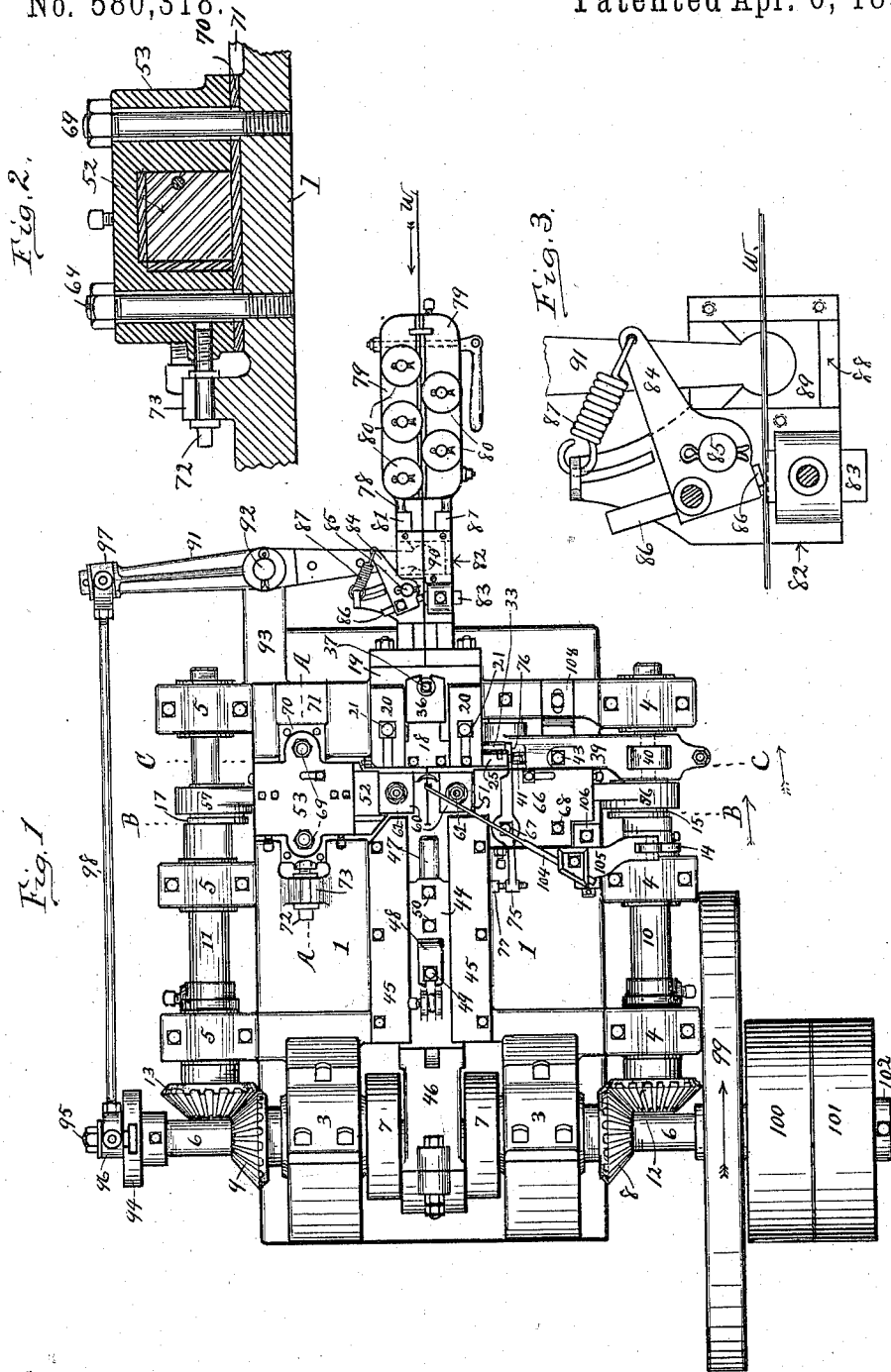
(No Model.)

4 Sheets—Sheet 1.

W. J. HUTCHINS
WIRE NAIL MACHINE.

No. 580,318.

Patented Apr. 6, 1897.



Witnesses.

John C. Perry
Thomas J. Coakley.

Inventor.

William J. Hutchins.

(No Model.)

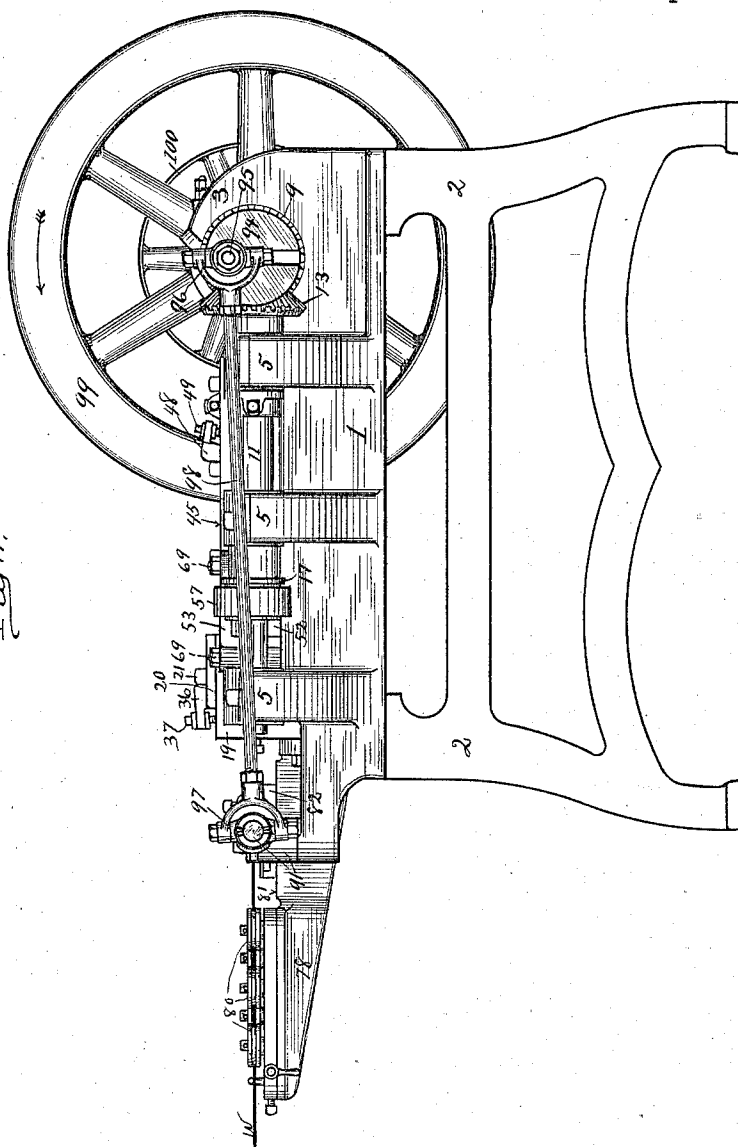
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Fig. 4.



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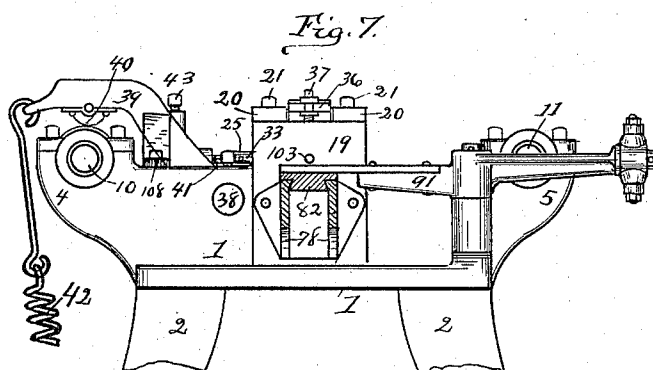
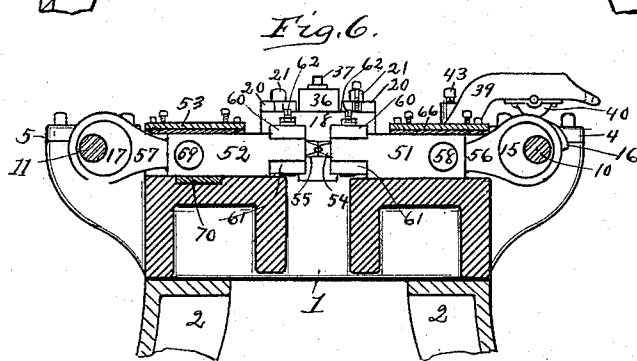
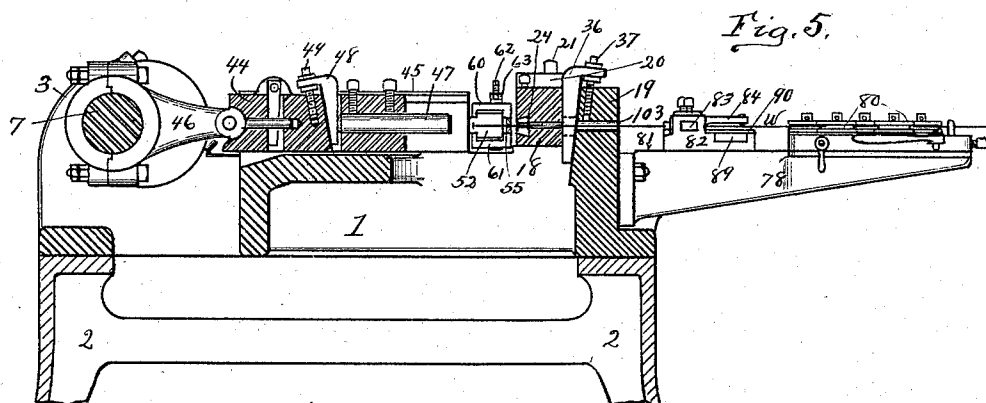
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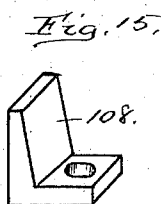
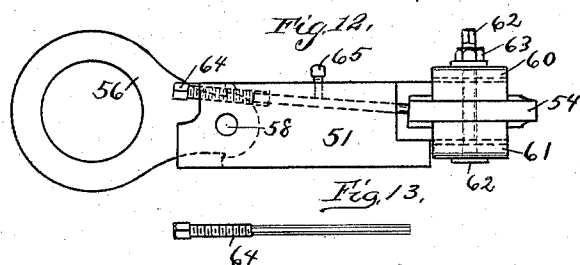
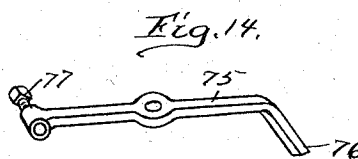
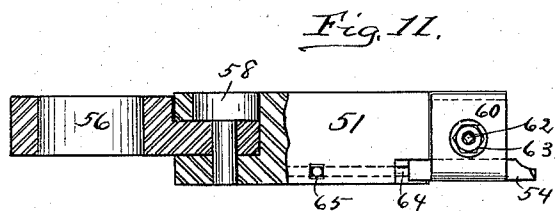
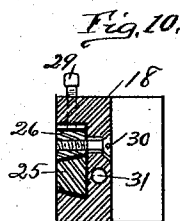
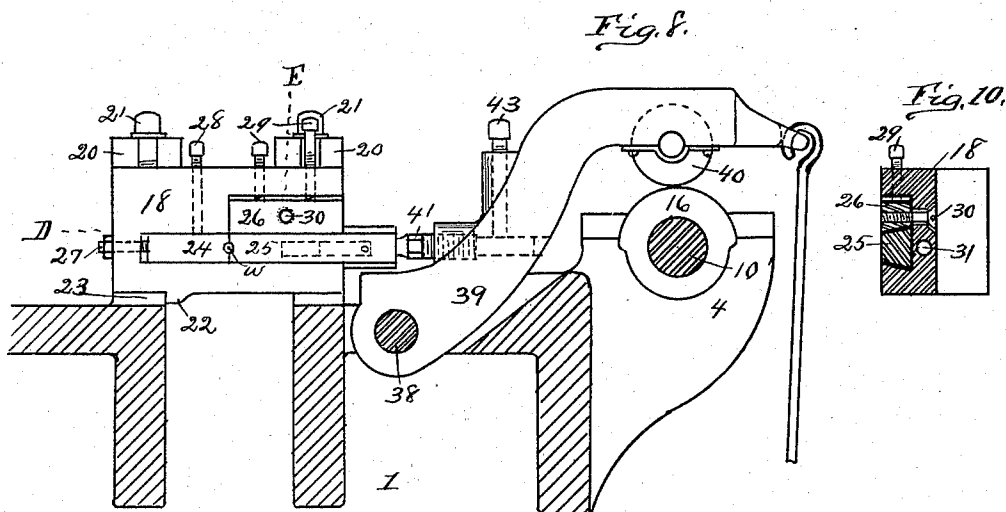
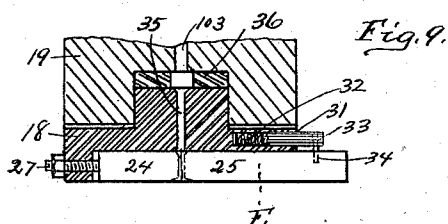
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WIRE NAIL MACHINE.

No. 580,318.

Patented Apr. 6, 1897.



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John C. Perry
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Inventor,
William J. Hutchins.

UNITED STATES PATENT OFFICE.

WILLIAM J. HUTCHINS, OF JOLIET, ILLINOIS, ASSIGNOR TO THE BATES
MACHINE COMPANY, OF SAME PLACE.

WIRE-NAIL MACHINE.

SPECIFICATION forming part of Letters Patent No. 580,318, dated April 6, 1897.

Application filed December 17, 1896. Serial No. 616,040. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. HUTCHINS, a citizen of the United States of America, residing at Joliet, in the county of Will and State of Illinois, have invented certain new and useful Improvements in Wire-Nail Machines, of which the following is a specification, reference being had therein to the accompanying drawings and the figures of reference thereon, forming a part of this specification, in which—

Figure 1 is a top plan of the machine; Fig. 2, a detailed vertical sectional view of one point-cutter cross-head and its adjustable box, taken on line A A of Fig. 1; Fig. 3, an enlarged detailed plan of the nail-wire feed-head of the machine; Fig. 4, a side elevation of the machine; Fig. 5, a central vertical longitudinal section of the main portion of the machine and a side view of the wire straightening and feeding mechanism thereof; Fig. 6, a vertical cross-section of the machine, taken on line B B of Fig. 1, looking in the direction of the arrow; Fig. 7, an end elevation of the machine, showing the straightener-frame and wire-feed head thereof in section; Fig. 8, a vertical cross-section of the central and one side portion of the machine, taken on line C C of Fig. 1, looking in the direction of the arrow; Fig. 9, a horizontal section of the grip-die block of the machine on a line immediately above the grip-dies and indicated at D on Fig. 8, also showing in section that portion of the machine-bed against which said block bears and the interposed block-adjusting wedge; Fig. 10, a vertical cross-sectional view of one end portion of said die-block and grip-die seated therein, taken on a line indicated at E in Figs. 8 and 9; Fig. 11, a detailed top view of one of the point-cutter cross-heads of the machine, showing one end portion thereof and the connected eccentric-strap in section; Fig. 12, a side view of said head and strap. Fig. 13 is a detailed view of the point-cutter-adjusting screw of said head. Fig. 14 is a detailed perspective of the attachment-arm for regulating the opening of the operative grip-die of the machine, and Fig. 15 is a detailed perspective of a bracket for forming a guide to one side of the machine grip-lever.

This invention relates to certain improve-

ments in a machine for cutting and forming nails from the end of an infeeding wire; and it consists in certain novel construction, arrangement, and combination of parts, which are fully set forth and explained in the following specification and pointed out in the claims.

Referring to the accompanying drawings, 1 represents the machine-bed mounted on standards 2 and provided with end-shaft bearings 3 3 and opposite side-shaft bearings 4 4 4 and 5 5 5.

6 is a shaft supported in bearings 3 3 and is made with a crank-head 7, fitting between said bearings, and has fixed thereon adjacent the outer side of said bearings oppositely-facing miter-gears 8 and 9, as represented in Fig. 1.

10 and 11 are the side shafts of the machine, respectively supported in bearings 4 4 4 and 5 5 5, and have respectively fixed thereon miter-gears 12 and 13, which are respectively arranged in mesh with gears 8 and 9.

Shaft 10 has fixed thereon a shedder-cam 14 for actuating a nail-shedder tool, an eccentric 15 for operating one point-cutter cross-head, and a grip-cam 16 for actuating a lever which operates the operative grip-die of the machine in one direction, and shaft 11 has fixed thereon an eccentric 17 for operating the opposite point-cutter cross-head of the machine.

18 represents the grip-die block of the machine, seated in a shouldered offset of an upright portion 19 of bed 1 in such manner as to bring its center in line vertically with the longitudinal center of bed 1, where it is removably held down upon its seat by means of clamp-blocks 20, held placed by means of screws 21, placed through said blocks and turned down into screw-threaded holes of the bed upright portion 19, and is further held from side movement on its seat in the direction of pressure in operating the operative grip-die by means of a bottom cross-lug 22 thereof, which bears against a shoulder 23 of its seat (see Fig. 8) and is provided on its rear side with a central rear-extending portion which fits in a vertical recess of upright portion 19 of bed 1, as shown in Figs. 1, 5, and 9, and is recessed in its face to receive a sta-

tionary grip-die 24, an operative grip-die 25, and an adjustable block 26 for operatively confining said operative die, and is provided in its end portion with a set-screw 27 for adjusting stationary die 24 endwise; with a screw 28, extending down therein against die 24 for firmly holding said die seated; with screws 29, extending down therein against block 26 for adjusting said block so as to properly confine operative die 25; with a screw 30, placed through a vertically-slotted hole in one end portion thereof (see Fig. 10) and screwed into block 26 for adjustably holding said block in its recess, and with a spring-barrel 31, arranged horizontally in its end portion immediately in the rear of die 25, into which is placed a coil-spring 32 (see Fig. 9) and a plunger 33, having a side-extending pin 34, placed in a cross-hole in the end portion of die 25 for the purpose of yieldingly holding said die moved out a little distance from die 24, and is made with a cross-hole 35, (see Fig. 9,) centrally in line with the gripping-faces of dies 24 and 25 and with the longitudinal center of bed 1.

Placed in the vertical recess of upright portion 19 of bed 1 and in rear of die-block 18 is a vertically-placed wedge 36, made with a rearwardly-extending forked portion at its upper end, in the fork of which is placed an adjusting-screw 37, which is turned down into a threaded hole of upright 19 and is made with two annular flanges arranged one above and one below said wedge-fork, so that by turning said screw the wedge may be adjusted vertically for the purpose of adjusting die-block 18 on its seat in either direction longitudinally of the machine-bed, but, however, within certain limits, which adjustment is for the purpose of bringing the gripping-dies 24 and 25 closer to or farther from the point-cutters of the machine, which operate adjacent the face of said die-block, as will be hereinafter more fully described, to regulate the length of wire between said grip-dies and point-cutters when operating the machine, and hence regulate the stock of wire utilized in forming the nail-heads.

In order that the further description of the machine parts may be more readily understood, I deem it proper to state that the wire line of the machine is horizontally on a plane with the center of the gripping-faces of dies 24 and 25 and with the center line of shafts 6, 10, and 11, and vertically on a line with the longitudinal center of bed 1.

Fulcrumed in a recess of bed 1 on a pin 38, which extends parallel with the machine wire line, and placed vertically below the extending end of the operative grip-die 25, is a lever 39, shaped to extend upward and outward and overreach at its outer end the grip-cam 16 of shaft 10, and is provided at said overreaching end with a roll 40, arranged to operate in a recess thereof and provided with integral trunnions housed at the sides of said recess and brought to bear and adapted to roll upon

the face of cam 16 (see Fig. 8) and thereby be operated to actuate said lever. Turned into a horizontally-arranged screw-threaded hole of lever 39, which hole is in direct line with die 25, is an adjusting-screw 41, which engages the extending end of said die, and when said lever is actuated by lifting its outer end said die is by means of said screw forced to register with die 24 to grip the nail-wire brought between said die-faces, which gripping takes place when cam 16 has turned to bring its highest face portion to engage lever-roll 40, which lifts said roll and hence actuates said lever, and when cam 16 is turned to bring its lowest face portion to engage lever-roll 40 said roll will be permitted to lower, and hence permit the end of lever 39 to lower, causing adjusting-screw 41 to recede, and thus permitting spring-plunger 33 to force die 25 out a distance limited by the movement of lever 39, so as to release the grip on the nail-wire between said grip-dies. Connected with the outer end of lever 39 is a coil-spring 42, (see Fig. 7,) which aids in the down movement of said lever end, which spring is connected at its lower end to any convenient portion of the machine-standard or base-support. Turned down into lever 39 against adjusting-screw 41 is a set-screw 43 (see dotted lines in Fig. 8) for the purpose of locking the adjustment of said adjusting-screw.

44 is a reciprocating head confined between guides 45, parallel with the wire line of the machine, and is connected, jointly, to a strap 46, which is connected with and operated by the crank of the main drive-shaft 6 to impart movement to said reciprocating head. Placed in a bore of said head, which is made central and longitudinal with the wire line of the machine, is a nail-heading tool 47, adjusted longitudinally by means of a wedge 48, placed in a recess of head 44 in rear of said tool and vertically adjusted by means of a double-flanged screw 49, which is turned down into a threaded hole of said head, as represented in Fig. 5, and as a means of holding said heading-tool into adjustment a pair of set-screws 50 are turned down into head 44 against said tool, as also shown in said figure.

51 and 52 are a pair of oppositely-arranged point-cutter cross-heads arranged, one in a stationary guideway of bed 1 and one in an adjustable guide-box 53, in line with each other and adapted to hold point-cutting tools 54 55, so as to register on the wire line of the machine at a point a little distance from the face of die-block 18. The outer end of each said cross-head is forked and socketed within said forks and connected with their respective eccentrics 15 and 17 of shafts 10 and 11 by means of straps 56 and 57, which are jointly held in said fork-sockets by means of cross-pins 58 and 59. (See Figs. 11 and 12.) The under and side portion of the inner end of said cross-heads is cut away, and applied to each said end portion is a pair of

clamp-blocks 60 61, one above and one below, with overreaching facing portions shaped to clamp and fit against the sides of the point-cutting tools, (see Figs. 5, 6, 11, and 12,) and placed vertically up through holes of said clamp-blocks and screw-threaded holes of said cross-heads are screws 62, which are adapted to be turned to either raise or lower the lower clamp-blocks 61 within certain limits, and thereby adjust the point-cutters so as to be brought to perfectly register vertically on the wire-line, which adjustment is necessary for the reason that slight variation from a given center is sometimes made in grinding the cutting edges of said cutters, and hence said adjustment may be made when setting cutters to cause them to properly register vertically should they vary in the grinding of their edges; and when the said cutters are properly adjusted nuts 63, which are turned on the upper end of screws 62, are turned down hard on the upper clamp-blocks 60, and thereby clamp the point-cutters firmly into position vertically. As a means of adjusting the said point-cutters toward the machine wire line, a screw 64, which is made with a plain end portion, as shown in Fig. 13, is placed in an inclined hole of each said cross-heads in line with the point-cutters 54 55 and with the screw-threaded portion of each screw turned into a corresponding threaded portion of said holes, so as to bring the end of the said screws against said point-cutters, (see Figs. 11 and 12,) and as a means of locking said screws 64 into adjustment set-screws 65 are turned down through threaded holes of said cross-heads against their plain portion, as represented in Fig. 12. The purpose of arranging said screws 64 in an inclined position, as shown, is to bring their heads above the center of side shafts 10 and 11, so as to be accessible by a wrench above said shafts, so they may be easy of access and readily turned to adjust said point-cutters.

In placing cross-head 51 in its guideway one side thereof is brought against the side of grip-lever 39, which lever forms a portion of one side of said guideway, (see Fig. 1,) and as a means of preventing side pressure of said cross-head forcing lever 39 sidewise from its proper operative position an upright bracket 108 is placed against the outer side of said lever, as represented in Fig. 1, (said bracket being shown in detail in Fig. 15,) and adjustably secured down upon bed 1; and as a means of confining said cross-head in said guideway a cap-plate 66 is secured above it by means of screws 67 68, placed through holes of said plate and turned down into threaded holes of one side portion of said guideway, as represented in Fig. 1. (See also Fig. 6.) The box 53, which operatively confines cross-head 52, is held down upon bed 1 by means of a pair of vertical studs 69, placed through holes of said box, which holes are elongated or slotted in the direction longitudinal of the machine-bed, so as to permit a limited adjustment of

said box in said direction either way from a given point, and secured to the bottom of said box is a cross-plate 70, placed in a longitudinal channel 71 of bed 1, (see Figs. 1, 2, and 6,) which plate forms a guide in said channel to hold said box from being turned from its proper cross position; and turned into a threaded hole in one side of said box is a double-flanged screw 72, placed with the portion between its flanges in the fork of an upright lug 73 of bed 1, (see Figs. 1 and 2,) which screw is for the purpose of adjusting said box and cross-head confined therein longitudinally of the machine-bed and thereby adjust one point-cutter 55 so as to be brought to perfectly register with its fellow cutter should the grinding of the cutting edges of said cutters vary sufficiently to cause adjustment thereof necessary. As an attachment to the machine to at times delicately regulate the opening of the operative grip-die 25 I have provided an arm 75, placed crosswise upon cap-plate 66 and centrally secured and clamped down upon said cap-plate by means of the plate-securing screw 67 being placed through a hole of said arm, (see Fig. 1,) which arm is provided at one end with a downwardly-extending finger 76, arranged to be engaged by the end of spring-plunger 33 and provided at its opposite end with a side-adjusting set-screw 77, arranged to be adjusted to bring its head against the side of guideway 45, and thereby by adjusting said screw said arm 75 may be moved or turned on its securing-screw to adjust finger 76, so as to arrest the out movement of said spring-plunger 33 and thereby arrest the opening or out movement of grip-die 25, and hence hold said die so as to open but a portion of the distance permitted by the movement of grip-lever 39, which when small nails are being made, and hence small-gage wire is being used, which is extremely flexible, becomes necessary to prevent the die 25 opening a distance sufficient to permit the wire to deflect from its proper line and hence get between the flattened portions of the die ends, as is liable to occur when the grip-dies open a distance greater than the diameter of the nail-wire.

78 represents a frame attached to the rear and outer side of upright 19 of bed 1, and supports at its outer end portion a straightener-roll table 79, provided with wire-straightening rolls 80, a portion of which are arranged to be adjusted to properly straighten wire passed between them, and the inner end portion of said frame is made to form a guideway 81 for supporting and guiding a sliding wire feed-head 82. Said head is provided with a removable stationary grip-block 83, held in an upright portion, so arranged that one end is brought to meet the wire line of the machine, (see Figs. 1 and 3,) with a grip-lever 84, fulcrumed on an upright stud 85, stationed at the opposite side of the wire line from block 83 and provided with a wire-gripping tool 86 removably set in one end

thereof, and so arranged that its gripping end is brought to meet the wire line of the machine immediately opposite block 83, and thus yieldingly held by means of a coil-spring 87, arranged connecting the opposite or outer end of said lever with a side-extending arm of head 82, and said head is further provided with a cross-guideway 88, having placed therein a sliding head-block 89, (see Fig. 3,) which head-block is confined and protected from dirt by means of a covering-plate 90, as represented in Figs. 1 and 5.

91 represents a feed-lever fulcrumed on an upright stud 92, fixed in the outer end portion of an arm 93 of bed 1 and arranged with its inner end socketed in head-block 89 of feed-head 82. Adjustably fixed on one end of shaft 6 is a slotted faced crank-disk 94, provided with an adjustable crank-stud 95, upon which is sleeved a knuckle 96, arranged connected with a corresponding knuckle 97, which is sleeved on the outer end of feed-lever 91 through the agency of a connecting-rod 98, which arrangement of parts is such that when said crank-disk is operated feed-lever 91 will, through the agency of said connecting-rod and knuckles, be operated and thereby reciprocate feed-head 82 on guideway 81.

Fixed on shaft 6 adjacent gear 12 is a fly-wheel 99, and adjacent the outer side of said wheel is fixed a tight or drive pulley 100, and sleeved on the outer end portion of said shaft, at the side of said tight pulley, is a loose or idler pulley 101, held into position by means of a collar 102, fixed on the extreme end portion of said shaft.

In operation nail-wire, which is represented at W, is passed in between straightener-rolls 80, thence to and between block 83 and the feed-gripping tool 86 of feed-head 82, thence through a horizontal hole 103 of upright 19 of bed 1, (see Figs. 5 and 7,) thence through a hole of wedge 36, (see dotted lines in Fig. 5,) and thence through the horizontal hole of die-block 18 and between the gripping-faces of grip-dies 24 25. When the wire has thus been placed, power is applied to the machine by passing a driven belt about pulley 100, which causes the parts to be operated to first move in grip-die 25 by the actuation of lever 39, and thereby grip the wire firmly between said dies, next to advance the point-cutters 54 55 upon the wire, causing them to cut and form a nail-point of the usual shape as they come to register, and thereby also sever the pointed wire portion from that portion of the wire held between the grip-dies, and by reason of the position of said point-cutters leave a short portion of the wire projecting from the face of said grip-dies sufficiently long to provide stock from which to form a nail-head, and at the conclusion of said cutting the wire portion pointed and severed, which after the first pointing operation is a nail, is shed from the point-cutters, and hence dislodged from the machine, by means of a

shedder-tool 104, which is set in an oscillating arm 105, pivoted to an upright 106 of bed 1, (see Fig. 1,) which arm overreaches shedder-cam 14 of shaft 10 and is yieldingly held so its outer end bears upon said cam and by reason of the form of said cam is actuated quickly at each revolution of the machine to cause said shedder-tool to quickly move down and return, and thereby shed the nail, as stated. Next, in the time of the machine, as the point-cutters recede the heading-tool 47 is advanced and engages the wire portion projecting from the face of the grip-dies and, by the combined stroke and pressure of said tool and its operating parts, flattens said wire portion against said dies, and thus forms the nail-head. Next, in the time of the machine, when the forming of the head is completed the grip-cam 16 will have turned so the roll of grip-lever 39 will drop to the lower face portion of said cam, and thereby permit said lever to operate to release its pressure against grip-die 25, and thus permit the spring-plunger 33 to force said die open to release its pressure on the nail-wire, and last in the time of the machine the feed-head 82 is reciprocated toward upright 19 and, by reason of the wire being placed in grip between block 83 and tool 86, will feed the wire W into the machine a distance equal to the length of the nail made and the stock consumed in forming the nail-head, which operation advances the wire, with a nail-head formed thereon as the heading-tool recedes, between the grip-dies and the point of action of the point-cutters to a position ready to be pointed, severed from the nail-wire, and shed from the machine. (See position of headed wire in Fig. 5.)

Different sizes of nails may be made by placing grip-dies having gripping-faces corresponding with the gage of wire from which the nails are made. The crank-pin of disk 94 is adjusted to give a stroke so as to move feed-head 82 the distance equal to the length of wire consumed in making each varied length of nail, and wedge 36 is adjusted, when necessary, to move die-block 18 to change the distance between the face of the grip-dies and the point-cutters to regulate the stock of wire from which the nail-heads are formed, and also wedge 48 is adjustable for the purpose of adjusting the heading-tool 47 so as to either engage the nail-wire hard to make large flat heads or but lightly to make small heads. The machine-bed is made with an opening below the place where the nails are made, so that in shedding the nails they drop through said opening into a suitable receptacle placed under the machine.

It will be understood by the foregoing description that the machine is automatic in the making of nails and capable of operating at a reasonably high rate of speed, and hence adapted to rapidly make nails, and also that each part acting upon the nail-wire is fully adjustable, so as to be brought to properly

register, and hence produce perfectly-formed nails.

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

1. The combination with the machine-bed provided with the shaft-bearings, the header and point-cutter cross-head guideways, and with the die-block upright support; of the main cranked drive-shaft provided with the fly-wheel, the pulleys and slotted crank-disk as shown; the side shaft provided with the grip-cam, the cutter-head eccentric and shedder-cam as shown; the opposite side shaft provided with the opposite cutter-head eccentric as shown; the miter-gears fixed upon said drive and side shafts and arranged in mesh in pairs so as to jointly operate said shafts; the adjustable die-block provided with the face-recess wherein the grip-dies are seated and one die thereof operatively confined, with the cross-wire passage-way, with the die adjusting and securing screws, with the rear extending portion, with the under cross-lug, and with the spring-barrel; the vertically-adjustable die-block adjusting-wedge and adjusting-screw thereof; the reciprocating header and adjustable nail-heading tool thereof; the strap arranged connecting said header with the drive-shaft crank; the reciprocating cutter cross-heads and adjustable nail-point cutters thereof; the straps arranged connecting said cross-heads with the side-shaft eccentrics; the grip-lever fulcrumed to the machine-bed, at its lower end, and provided with the roll at its upper outer end and actuated thereat by said side-shaft cam, and provided with the adjustable screw for engaging and operating the operative grip-die; the stationary grip-die; the operative grip-die; the spring-plunger for opening said operative grip-die; the nail-wire straightening, feeding and nail-shedding mechanism, substantially as set forth.

2. In the wire-nail machine described the combination with the removable die-block and the stationary and operative grip-dies supported in said block; the grip-lever fulcrumed vertically below the extending end of said operative die and provided with the adjustable screw arranged to engage the end of said die and with the roll housed at its outer, or free end; the cam engaged by and adapted to operate said roll to actuate said lever; and the spring-plunger arranged to connect with, and to force said operative die from said stationary die as said grip-lever recedes, substantially as set forth.

3. In the herein-described wire-nail machine, in combination with the die-block provided with the spring-barrel and spring seated therein, and with the stationary and operative grip-dies; the plunger placed in said barrel and arranged to connect with said operative die, substantially as and for the purpose specified.

4. In the herein-described wire-nail ma-

chine, the die-block recessed to receive the wire-grip dies as shown, and provided with the rear extending portion arranged to fit into the recess of the upright portion of its support, and with the bottom cross-lug arranged to bear against the shoulder of its seat, substantially as and for the purpose specified.

5. In the herein-described wire-nail machine, in combination with the vertically-adjustable wedge arranged in the vertical recess of the die-block support, and the clamp-blocks removably attached to the top of said support; the die-block recessed to receive the wire-grip dies, as shown; and provided with the rear extending portion arranged to fit into said vertical recess and bear against said wedge, and with the bottom cross-lug arranged to bear against the shoulder of its seat, substantially as and for the purpose specified.

6. In the wire-nail machine described, in combination with the operative grip-die and spring-plunger connecting said die; the adjustable arm provided with the finger arranged to be engaged by said plunger to control the receding movement of said die, substantially as and for the purpose specified.

7. In the wire-nail machine described, in combination with the shaft-eccentrics and straps thereof; the point-cutter cross-heads respectively forked and socketed at their outer end to receive the ends of the arms of said straps, and cut away at the under and side portion of their inner end to accommodate the point-cutters and clamps thereof, and provided with the inclined adjusting screw-holes threaded a portion of their length and with the vertical threaded holes at their inner-end portion; the cross-pins arranged to connect said heads with their respective eccentric-straps; the point-cutter adjusting-screws; the point-cutter clamps; the screws and nuts for adjusting and securing said clamps and thereby adjusting and securing the point-cutters, substantially as set forth.

8. In the wire-nail machine described in combination with the wire feeding and gripping mechanism; the reciprocating head having set therein the nail-heading tool, and provided with the vertically-adjustable wedge for longitudinally adjusting said heading-tool; the reciprocating point-cutter cross-heads respectively provided with the clamps adapted to hold and vertically adjust the point-cutting tools, with the screws for longitudinally adjusting said point-cutting tools; and with the screws for locking the adjustment of said adjusting-screws; and the box, for operatively confining one of said cross-heads, arranged to be adjusted in the direction parallel with the wire line of the machine for correspondingly adjusting the point-cutting tool carried by said cross-head, substantially as set forth.

9. In the wire-nail machine described in combination with the point-cutter cross-heads and point-cutting tools carried by said heads;

the die-block arranged facing the path of travel of said point-cutting tools and recessed in its face to receive and hold a stationary grip-die, and operatively confine an operative grip-die arranged to operate in conjunction with said stationary die; and provided with the under cross-lug arranged bearing against a ledge of its seat for preventing movement thereof in the direction of pressure of said operative grip-die; the clamp-blocks arranged to hold said die-block down upon its seat; and the vertically-adjustable wedge placed at the rear of said die-block for adjusting said block and dies therein toward the path of travel of said point-cutter tools, substantially as and for the purpose set forth.

10. In the herein-described wire-nail machine, in combination with the die-block recessed to receive the wire-grip dies as shown, and provided with the plunger-barrel arranged parallel with, and in the rear of the operative grip-die, and with the compression-spring placed in said barrel; the plunger arranged in said barrel against said spring, and provided with the side extending pin, at its outer end, arranged to register in a cross-

hole of the extending end portion of the operative grip-die, substantially as and for the purpose specified.

11. In the wire-nail machine described the combination with the removable die-block and the stationary and operative grip-dies supported in said block; the grip-lever fulcrumed below the extending end of said operative die and provided with the adjustable screw arranged to engage the end of said die, and with the roll housed at its outer end; the cam engaged by and adapted to operate said roll to actuate said lever; the spring-plunger arranged to connect with and to force said operative die from said stationary die as said grip-lever recedes; and the feeding mechanism, comprising the reciprocating feed-head, the lever, the connecting-rod and knuckles thereof and the crank, for intermittently feeding wire between said grip-dies at periods of time when the said grip-lever recedes, substantially as and for the purpose specified.

WILLIAM J. HUTCHINS.

In presence of—

C. PERCY UFFORD,
JOHN C. PERRY.