

R. J. SHIPLEY.

MACHINE FOR FORMING PINS FOR PIN FASTENERS.

No. 420,362.

Patented Jan. 28, 1890.

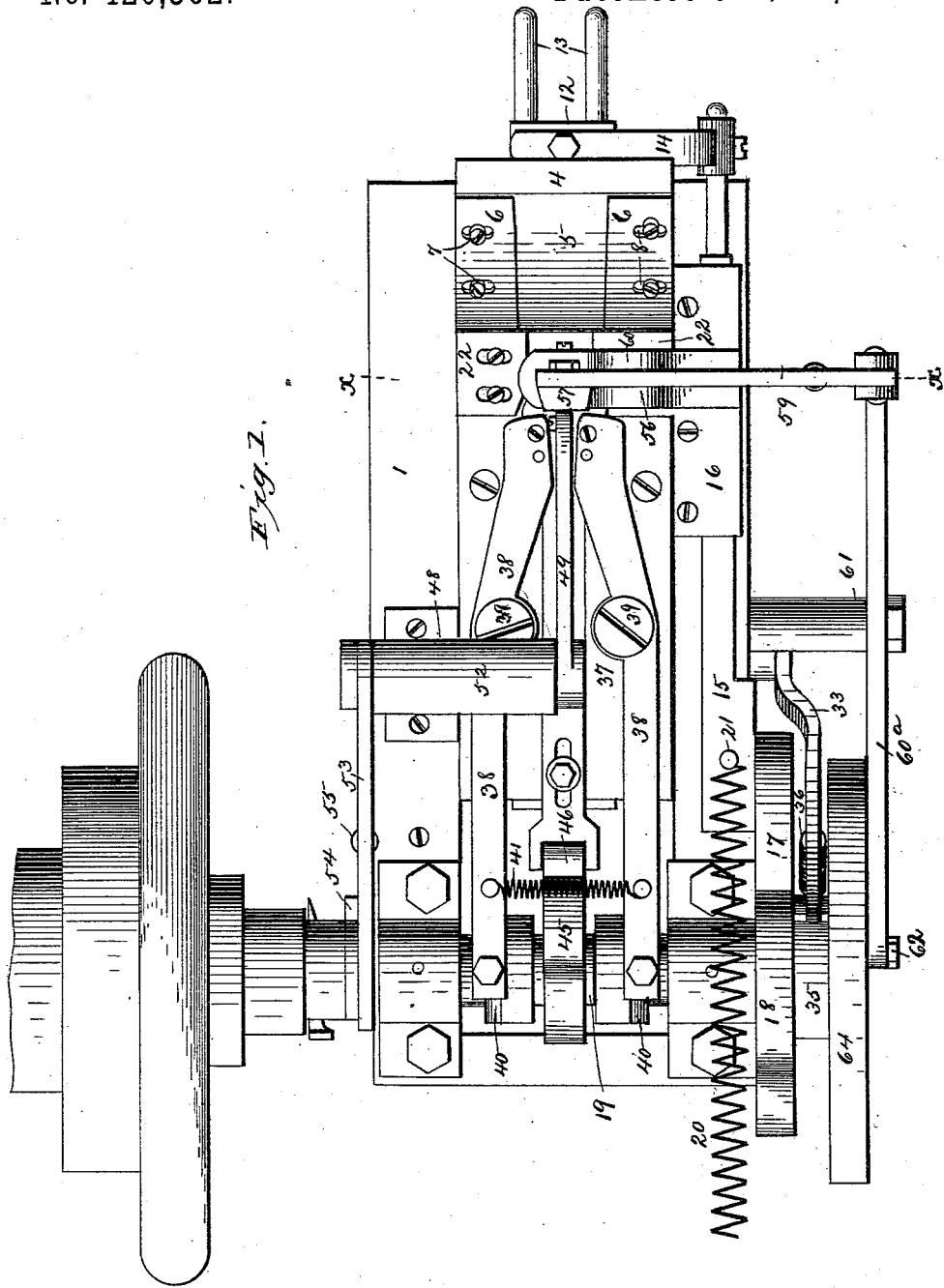


Fig. 1.

Witnesses
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Inventor
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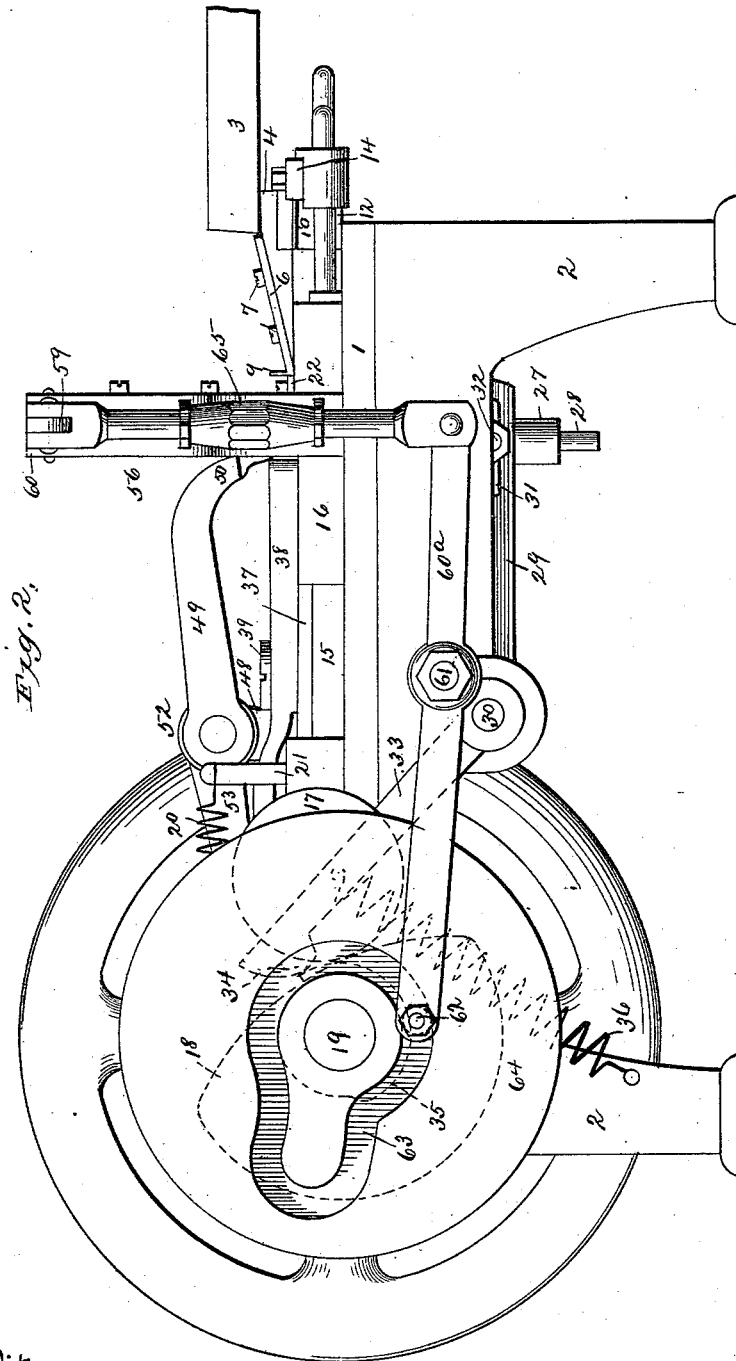


Fig. 2.

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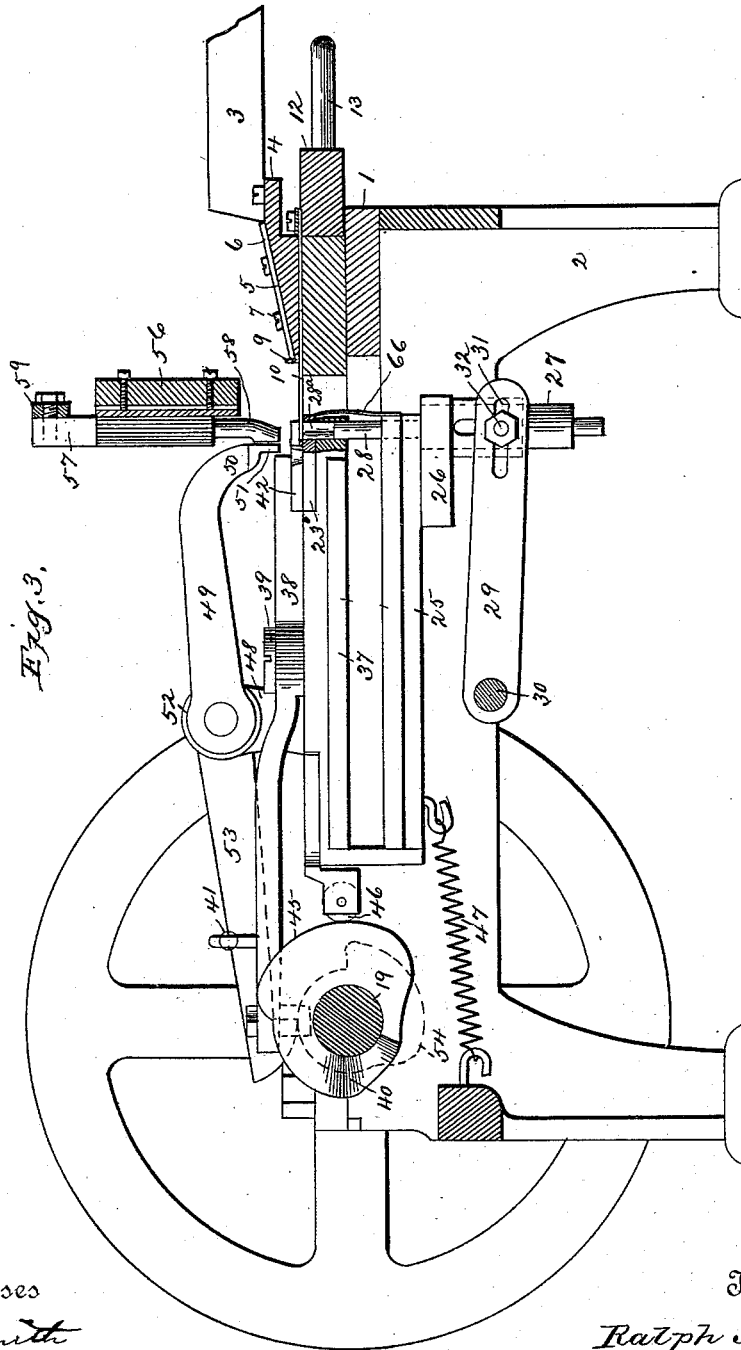


Fig. 3.

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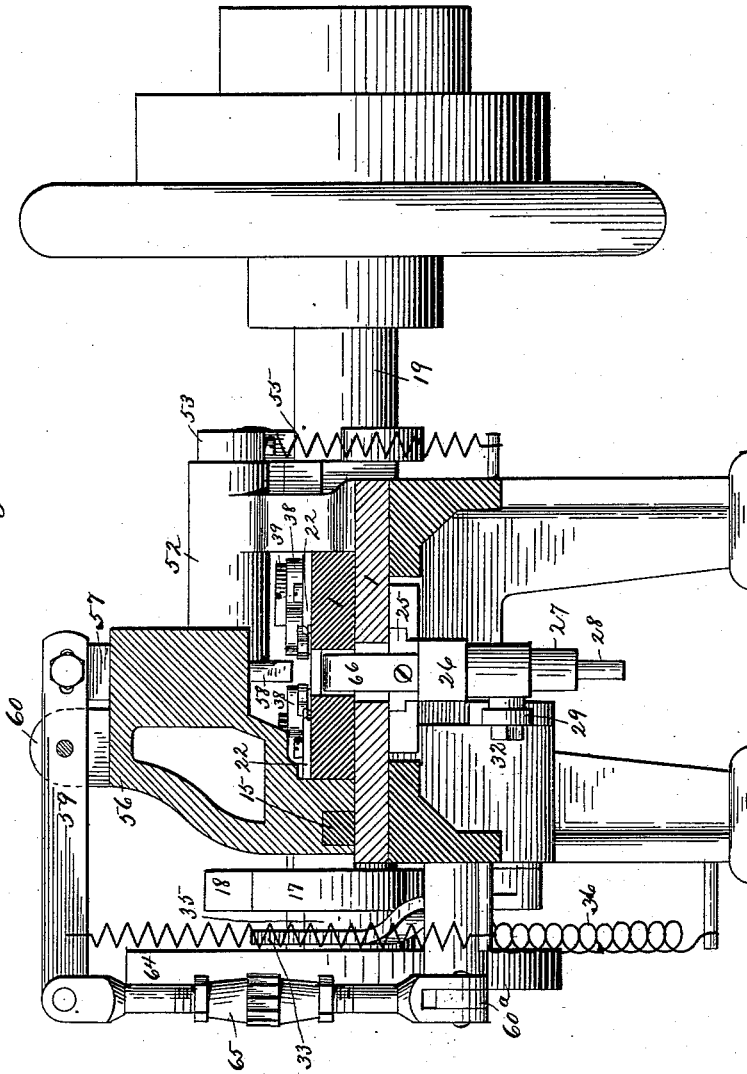
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Fig 4.



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Fig. 6

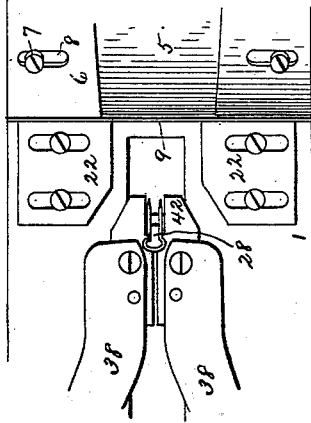


Fig. 8

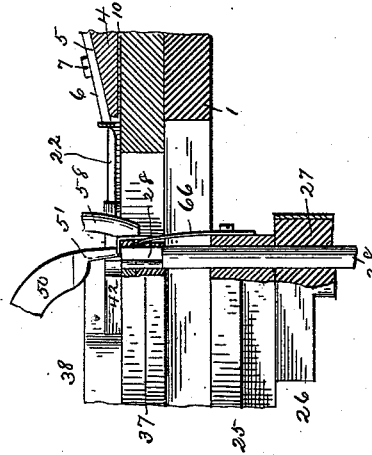


Fig. 5

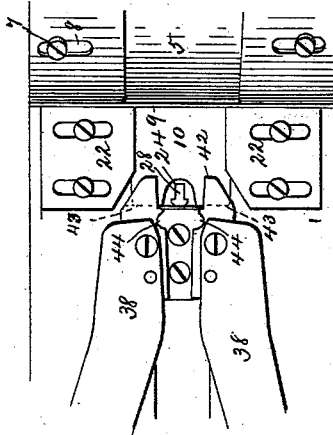
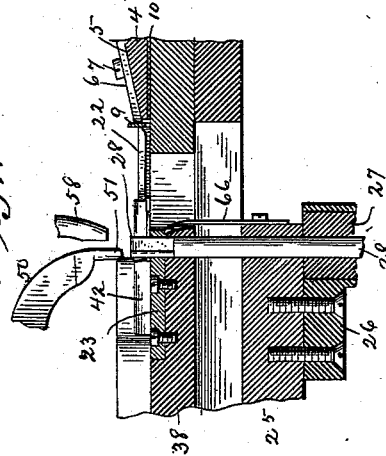
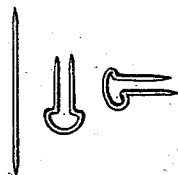


Fig. 7



Witnesses
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Fig. 9.



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UNITED STATES PATENT OFFICE.

RALPH J. SHIPLEY, OF WATERBURY, CONNECTICUT, ASSIGNOR TO GEORGE W. MCGILL, OF RIVERDALE, NEW YORK.

MACHINE FOR FORMING PINS FOR PIN-FASTENERS.

SPECIFICATION forming part of Letters Patent No. 420,362, dated January 28, 1890.

Application filed October 22, 1889. Serial No. 327,813. (No model.)

To all whom it may concern:

Be it known that I, RALPH J. SHIPLEY, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented new and useful Improvements in Machines for Bending and Forming Pins for Pin-Fasteners, of which the following is a specification.

My invention relates to mechanism for bending and forming the double-pointed pins produced by the machine covered by the application filed by Joseph H. Baird, of Waterbury, Connecticut, of even date herewith, and bring said pins into the form required to enable them to receive their heads or caps, whereby they are converted into the pin-fasteners well known in the trade as "McGill's pin-fasteners."

It is the purpose of my invention to provide automatic means for feeding the double-pointed pin, doubling the same at or about its center and bending it around a forming pin or die, whereby a laterally-enlarged loop is formed, and for then bending the prongs at a right angle to the looped central portion, leaving the pin in condition to receive the cap.

The invention consists in the several novel features of construction and new combinations of parts hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a plan view of the entire machine. Fig. 2 is an elevation taken from the front side of Fig. 1. Fig. 3 is a substantially central longitudinal vertical section of Fig. 1. Fig. 4 is a transverse vertical section in the line $x x$, Fig. 1. Fig. 5 is a detail plan view showing the position of the bending-jaws as the pin is fed to them. Fig. 6 is a similar view showing the same parts after closing, the pin being shown in their grasp. Fig. 7 is a vertical longitudinal section of Fig. 5, showing part of the holding-lever and bending-die. Fig. 8 is a similar view showing the action of said parts. Fig. 9 includes a view of the blank before it is operated upon, a view of the same when the operation has been partially completed, and a view of the finished device.

In the said drawings, the reference-numeral 1 designates the bed-plate or supporting-frame of the machine, which is sustained by legs 2. Upon the front end of this frame is mounted a hopper-support or receiving-tray 3, elevated somewhat above the plane of the bed-plate and supported by the end of an angular block 4, resting upon the bed-plate. The gently-inclined face 5 of this block forms a feed-surface for the double-pointed pins, which are removed from the tray and placed upon said surface by hand. Upon each side of the block are mounted laterally-adjustable plates 6, adjusted at such a distance from each other as to permit the ends of the pins to pass down between them. These plates are attached by means of screws 7, passing through slots 8 in the plates.

At the lower end of the inclined feed-surface 5 is arranged a transverse stop-plate 9, a sufficient space being left between its vertical face and the end of the block 4 to permit the downward passage of a single pin at a time. The plate is also raised far enough above the table or bed-plate to allow one pin at a time to pass beneath it under the impulse of a thin feed-plate 10. This feed-plate is secured to a block 12, which reciprocates upon parallel horizontal supports 13, and is driven by an arm 14, connected to a feed-slide 15, which lies upon the table or bed 1 and moves in a guideway formed in the base of a bracket-block 16. The end of the feed-slide is provided with a large friction-roll 17, which rests against a cam 18, carried by the machine-shaft 19, by the revolution of which the feed-plate is retracted. Its forward or feed movement is effected by a spring 20, connected at one end to a pin or post 21 on the slide and at the other end to any suitable rigid support. Upon each side of the table or bed are mounted plates 22, which are arranged in rear of the stop-plate 9. These plates overhang the ends of the pin as it is advanced by the feed-plate and prevent it from rising and freeing itself from the end of said feed-plate.

Upon the bed or table 1, in the line of the middle portion of the pin as it is fed by the plate 10, is arranged a plate 23, let into the

table so that its surface is flush therewith. In the end of this plate is formed an opening 24, resembling a key-hole slot, which also extends through the table or bed beneath and through a bracket 25, attached beneath said table. Upon the lower surface of this bracket is bolted a block or guide-bracket 26, having a socket in which is arranged a carrier 27. In this carrier is rigidly mounted a vertical pin 28, passing up through the bracket 25, and having its end 28^a so shaped that it fits the key-hole slot 24 in the plate 23. The carrier 27 is moved in one direction by an arm 29, carried by a rock-shaft 30, and having a slot 31 in its end engaging with a stud 32 on the carrier 27. The rock-shaft 30 is operated by a cam-lever 33, having a shouldered end 34, which rests upon a cam 35 on the shaft 19, said cam having a long holding-surface, as shown in dotted lines in Fig. 2. The lever 33 is thrown downward or off the cam 35 by a spring 36, connected to said lever and one of the supports of the machine. The action of the spring raises the carrier 27 and projects the end 28^a of the pin above the surface of the table or bed, while the operation of the cam 35 lowers the pin and brings its end substantially flush with the surface of the block 23.

Mounted in suitable ways in the bed or table 1 is a carrier-plate 37, upon which are pivotally mounted two levers 38, turning upon fulcrum-bolts 39. The rearward ends of these levers extend as far as the shaft 19 and are provided with friction-rolls, (shown in dotted lines in Fig. 3,) which lie outside the two face-cams 40 on the shaft 19, which by the revolution of the shaft spread the rear ends of the levers and close their forward ends. The rear ends of the levers are drawn together by a spring 41.

Upon the forward ends of the levers 38 are mounted jaws 42, which lie flat upon the bed-plate 23, but are cut away upon their under faces from the nose of each jaw back to shoulders 43, (shown in dotted lines in Fig. 5,) said shoulders being parallel with the pin as it is fed, and lying, when the carriage is retracted, in a line passing just behind the rearward end of the key-hole slot in the bed-plate 23. Upon the meeting faces of the jaws, just in rear of the shoulders 43, are formed half-round recesses 44, which, when the jaws are closed, resemble the shape of the head 28^a of the forming-pin 28. The carriage 37 is pushed forward in its ways by means of a cam 45 on the shaft 19 acting upon a friction-roll 46 on the rear end of the carriage, and is retracted by a spring 47. (Shown in Fig. 3.)

Fulcrumed in a bracket 48 on the bed-plate 1 is a lever 49, having a forward downwardly-curved extremity 50, upon which is formed a clamp 51. When the carriage 37 is retracted to its full extent, this clamp overhangs the head of the pin 28 and is directly over its narrow portion. The extended fulcrum of the lever 49, which lies in a prolonged bear-

ing 52, is provided with a cam-lever 53, having a nose lying upon a cam 54 on the shaft 19, said cam-lever being thrown down to raise the lever 49 by a spring 55.

Rising from the bracket-block 16 is a transversely-arranged bracket 56, in which is arranged a vertically-sliding head 57, carrying a bending-die 58. The bracket 56 overhangs the plate 23, and is so arranged that when the carriage 37 is retracted and the die descends its point or end shall pass down immediately in front of the transverse vertical edge or surface of the plate 23 and in the direct longitudinal line with the center of the forming-pin 28. The head 57 is driven downward by lever 59, fulcrumed between lugs 60 on the top of the bracket 56, and having its power end connected to a lever 60^a, fulcrumed on a stud 61, projecting from the side of the frame 1. Upon the end of this lever is a bearing 62, carrying a friction-roll which lies in a cam-race 63, formed in the face of a wheel 64 on the outer end of the shaft 19. The coupling between the levers 59 and 60 consists of a turn-buckle 65, by which the die 58 may be adjusted to the required stroke.

Upon the forward end of the bracket 25 is bolted a leaf-spring 66, the free end of which projects upward and lies normally in a recess formed by cutting the bed-plate slightly away beneath the edge of the plate 23. The spring is curved outwardly, so that while its point lies just in and may pass farther within said recess the body thereof projects in front of the vertical edge of said plate 23.

The operation of the machine is as follows: The pins being placed upon the inclined face 5 of the block 4, they roll down and pass between the end of said block and the stop-plate 9 to the table or bed-plate 1. The feed-plate 10 being driven forward by the action of the spring 16, one of said pins is pushed forward, its ends or points lying under the plates 22 until, the carriage 37 having been retracted, it is brought upon the plate 23, its ends resting against the vertical shoulders 43 of the jaws 42, and its middle portion lying just behind the head 28^a of the forming-pin. The further revolution of the shaft 19 now retracts the feed-plate and lifts the forming-pin 28^a above the plate 23, as seen in Fig. 7, whereupon by the action of the cam 45 the carriage 37 rides forward, carrying forward the jaws 42 on each side of said pin and bending the latter at its middle around the half-round portion of the forming-pin. This movement also advances the levers 38 until the half-round recesses 44 of the jaws 42 are in the same transverse line with the correspondingly-formed portion of the forming-pin, whereupon the face-cams on the shaft act upon said levers, closing the jaws upon the forming-pin and bending the pin into the form shown in Fig. 6. The forming-pin 28 now sinks downward, and as it does so the lever 49 descends upon the loop formed in the pin and surrounding the head of the

forming-pin. As the clamp secures a firm hold upon this loop, binding it securely against the surface of the plate 23, the jaws 42 open and the carriage 37 recedes to the position shown in Fig. 8, in which the looped portion only of the pin rests upon the plate, while its prongs project beyond its forward edge. The die 58 now descends upon the projecting prongs, bending them at right angles with the looped portion, by which they are brought against the spring 66, slightly compressing the latter and forcing its point into the recess beneath the plate 23, whereupon the die rises, the clamp is lifted off the loop, and the released pin is projected by the spring 66 off the plate 23 and falls into a suitable receptacle below.

The blank shown in Fig. 9 consists of a straight piece of wire sharp at both ends, forming a double-ended pin. When this blank has been bent centrally around the pin 23, and after the jaws 42 have closed, as shown in Fig. 6, the blank is brought into the form shown in the middle part of said Fig. 9. After the bending-die 58 descends it is brought into the form shown in the lower portion of said figure and is complete.

What I claim is—

1. In a machine for forming and bending pins for pin-fasteners, the combination, with feeding devices advancing a single pin, of a rising and falling forming-pin, a pair of levers carrying jaws provided with shoulders against which the pin lies, said jaws having recesses adapted to inclose the forming-pin, and means for advancing and closing said jaws, substantially as described.

2. The combination, with feeding devices advancing a single straight double-pointed pin, of a forming-pin rising and falling in rear of the fed pin, a pair of levers pivoted on a reciprocating carriage and provided with jaws cut away on their lower surfaces to form transverse shoulders, which lie, in the retracted position of the carriage, in a line passing in front of the forming-pin, said jaws also having recesses in their meeting faces which inclose the forming-pin and correspond in shape therewith, and means for advancing the carriage and closing the jaws upon said forming-pin, substantially as described.

3. The combination, with a feed-plate feeding a single straight double-pointed pin upon a flat bed-plate, of a forming-pin rising and falling in a key-hole slot in said plate to project said forming-pin above and sink it flush with said bed-plate, levers having jaws lying flat on said bed-plate and having their lower faces cut away to form shoulders normally lying in a transverse line passing in front of the forming-pin, and a reciprocating

carriage on which said levers are mounted and whereby the jaws are carried forward on each side of the forming-pin to bend the pin at its middle point around the latter, substantially as described.

4. The combination, with a feed-plate feeding a straight double-pointed pin, of a rising and falling forming-pin having, substantially, a key-hole shape in cross-section and rising above and sinking flush with the bed-plate, levers having jaws lying flat on said bed-plate and provided with bending-shoulders and having in their meeting faces recesses conforming to the half-round portion of the forming-pin, a carriage on which said levers are pivoted, a cam and spring advancing and retracting said carriage, and a spring and face-cams opening and closing the jaws, substantially as described.

5. The combination, with a feed-plate, of a forming-pin rising and falling in a slot in the bed-plate, a reciprocating carriage, a pair of levers having jaws lying on said bed-plate and cut away on their lower faces to permit the pin to pass against transverse shoulders formed on said jaws, a cam and spring advancing and retracting the carriage, a spring and face-cams opening and closing the jaws, a lever carrying a clamp descending upon and holding the bent portion of the pin, and a bending-die descending upon the points which project over the vertical edge of the bed-plate as the carriage recedes, bending said prongs against said face, substantially as described.

6. The combination, with a feed-plate and with a bed-plate having a key-hole slot, of a forming-pin rising and falling in said slot, levers pivoted upon a reciprocating carriage and having jaws lying flat upon the bed-plate and cut away underneath to form transverse shoulders against which the pin lies, said jaws also having recesses on their meeting faces which conform to the shape of the forming-pin, means for reciprocating the carriage and for opening and closing the jaws, a clamp adapted to descend upon the bent portion of the pin and pressing it against the face of the bed-plate, a bending-die descending upon the points of the pin projecting from the edge of the bed-plate, and a spring mounted on the bracket carrying the bed-plate and against which the downwardly-turned prongs are forced, compressing said spring, substantially as described.

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

RALPH J. SHIPLEY.

Witnesses:

F. L. ADAMS,
H. H. WALKER.