

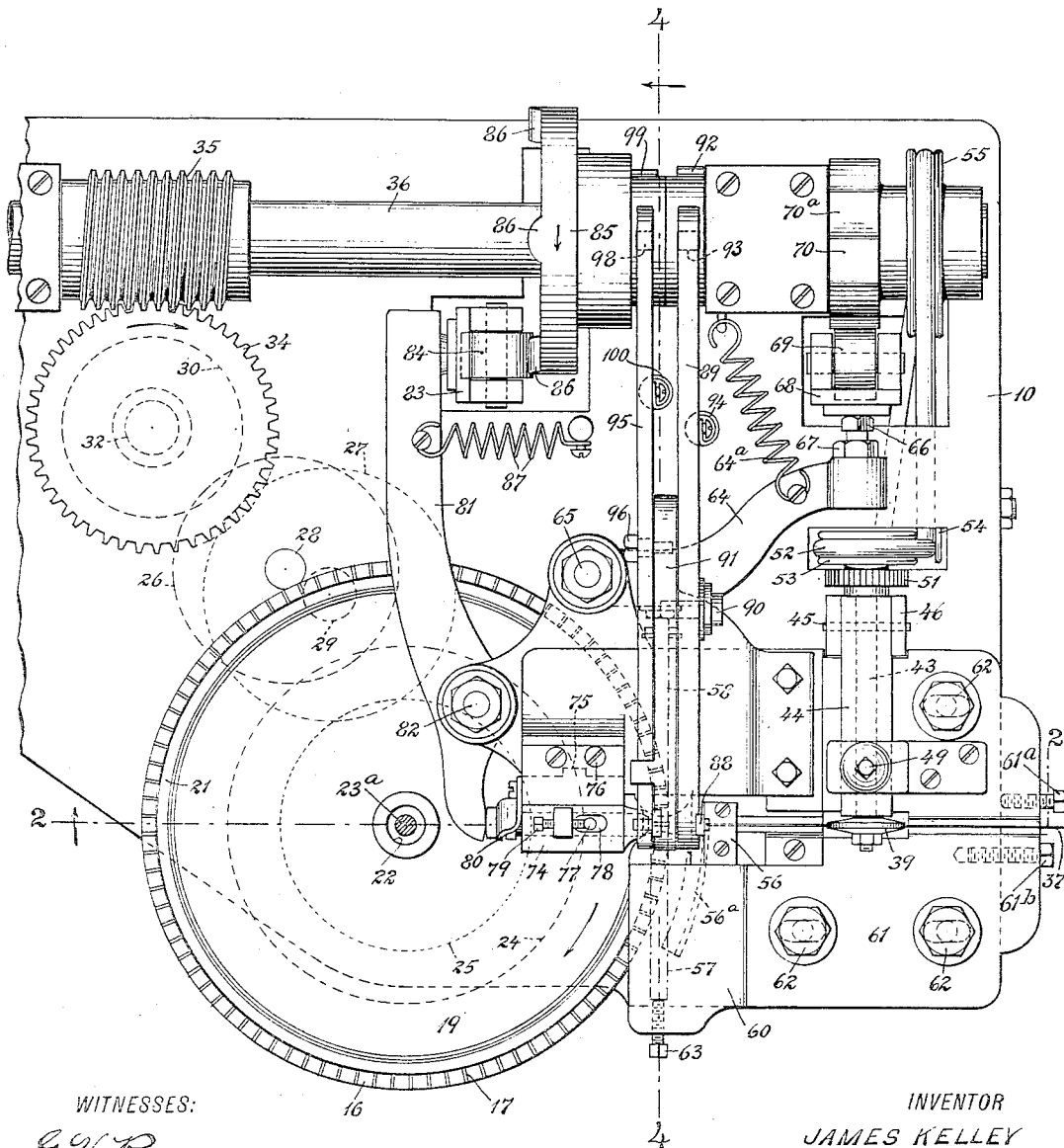
J. KELLEY.
MACHINE FOR MAKING PINS.
APPLICATION FILED SEPT. 16, 1910.

1,066,120.

Patented July 1, 1913.

4 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

E. V. Rasmussen
John A. Klenck

INVENTOR

JAMES KELLEY

BY

Ponsen & Marks
ATTORNEYS

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4 SHEETS—SHEET 2.

Fig. 2.

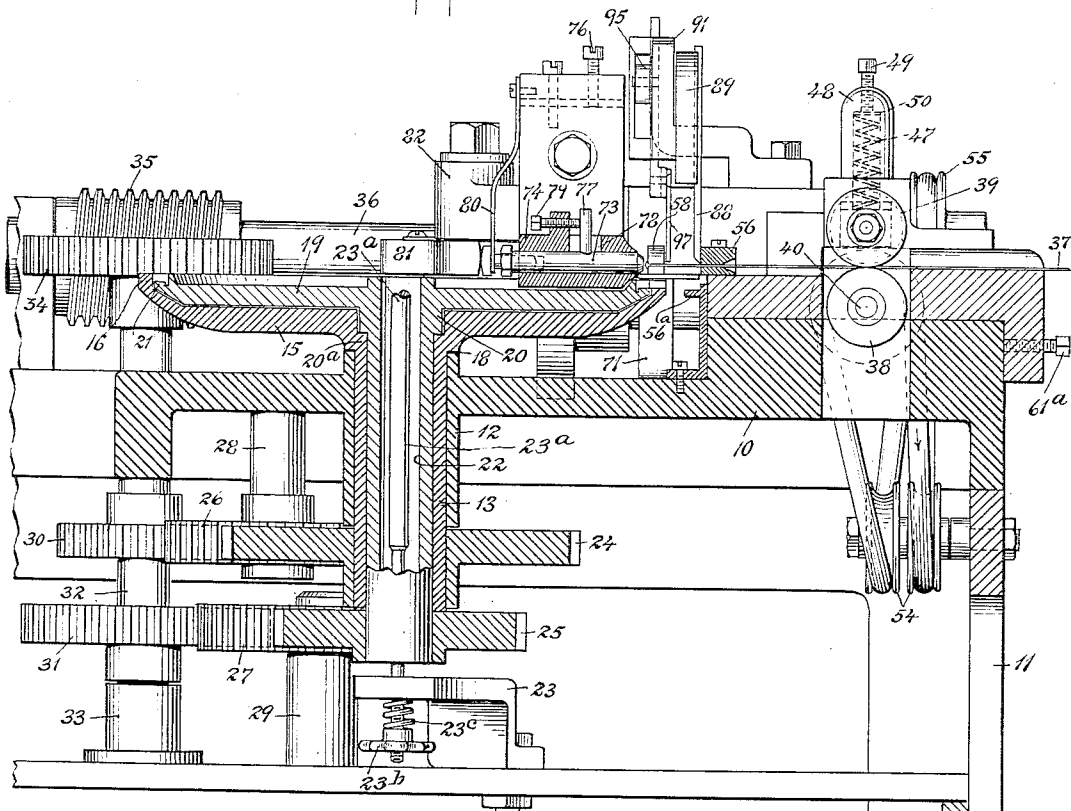


Fig. 5.

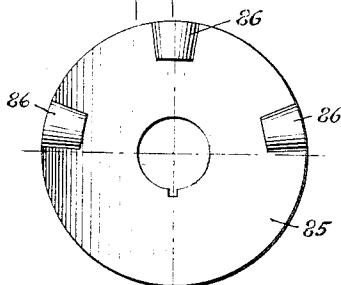


Fig. 6.

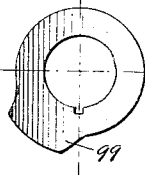


Fig. 7.

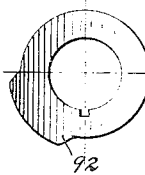
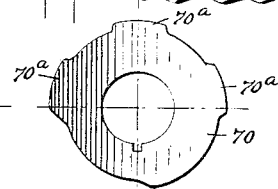


Fig. 8.



WITNESSES:

G. V. Rasmussen
John A. Schenck

INVENTOR

JAMES KELLEY

BY

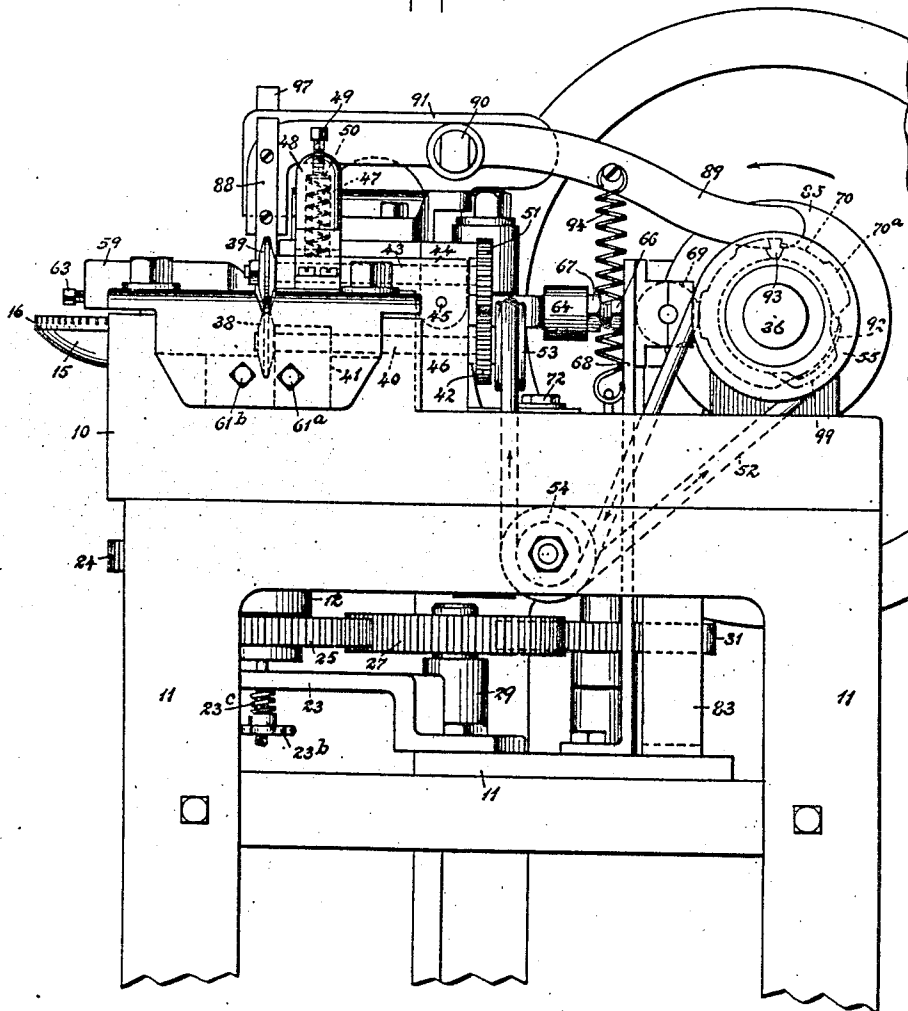
Potter & Smith
ATTORNEYS

J. KELLEY.
MACHINE FOR MAKING PINS.
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4 SHEETS—SHEET 3.

Fig. 3.



WITNESSES:

E. V. Rasmussen
John A. Kellum

INVENTOR

JAMES KELLEY

BY

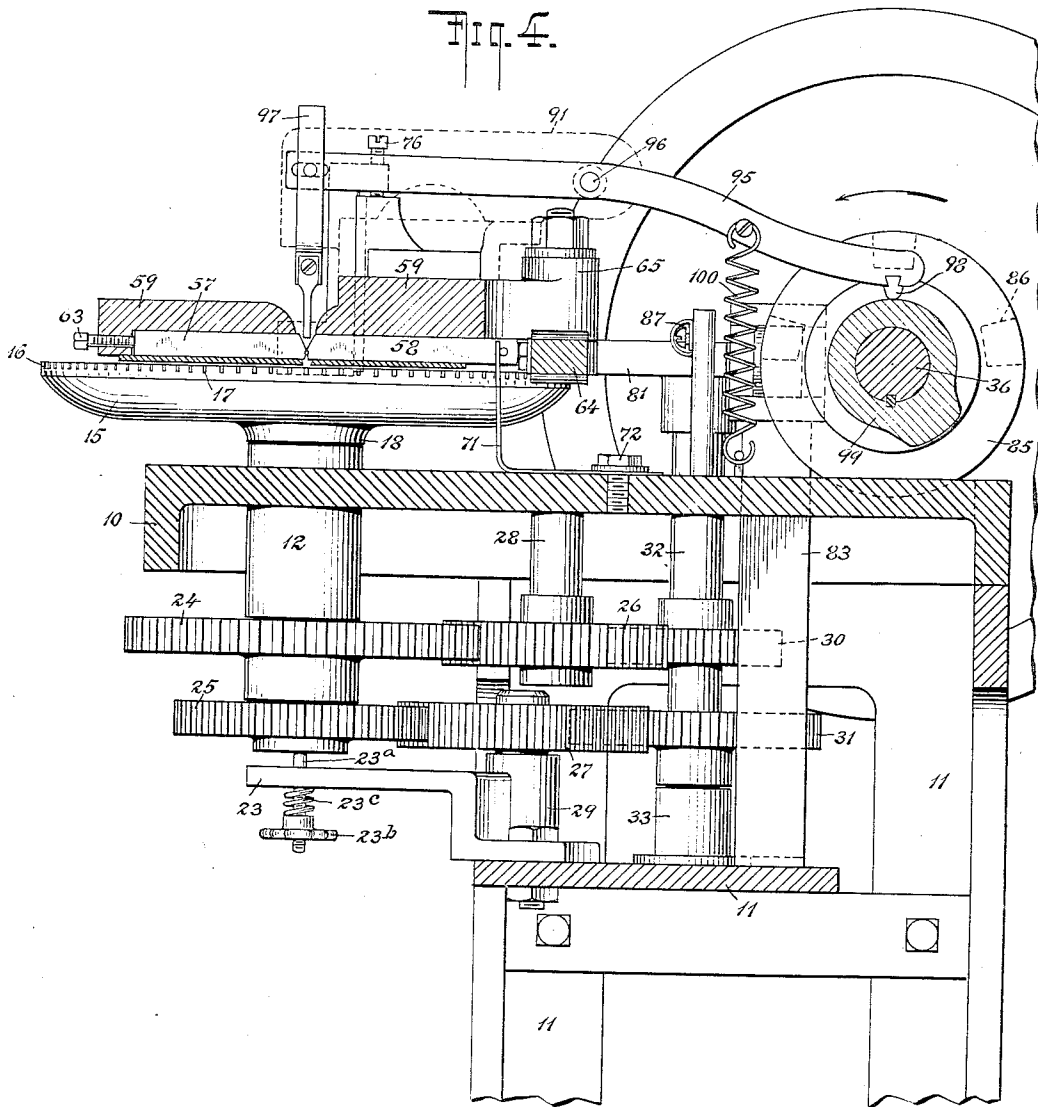
R. O. Kellum & Co.
ATTORNEYS

J. KELLEY.
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APPLICATION FILED SEPT. 16, 1910.

1,066,120.

Patented July 1, 1913.

4 SHEETS—SHEET 4.



WITNESSES.

E. V. Rasmussen
Wm. A. Klemm

INVENTOR

JAMES KELLEY

BY

Bensen & Knecht
ATTORNEYS

UNITED STATES PATENT OFFICE.

JAMES KELLEY, OF WINSTED, -CONNECTICUT.

MACHINE FOR MAKING PINS.

1,066,120.

Specification of Letters Patent.

Patented July 1, 1913.

Application filed September 16, 1910. Serial No. 582,288.

To all whom it may concern:

Be it known that I, JAMES KELLEY, a citizen of the United States, and a resident of Winsted, county of Litchfield, State of Connecticut, have invented certain new and useful Improvements in Machines for Making Pins, of which the following is a specification.

My invention relates to pin making machines and more particularly to machines for forming the head of the pin and has for its object to improve and simplify the construction thereof.

The particular advantage secured with my improved construction is the delivery of the headed pin directly to the rolling or pointing tables instead of to an intermediate carrier as has heretofore been necessary.

A further object of my improvement is to so construct the same that one gripping die will rest in and the other gripping die be movable in a rigid metallic block so that a perfect rigid resistance to the blow of the heading punch is secured.

Other advantages of my invention will appear from the description hereinafter and the features of novelty will be pointed out in the appended claims.

Reference is to be had to the accompanying drawings in which—

Figure 1 is a plan view of my improved machine; Fig. 2 is a sectional view thereof taken on the line 2—2 of Fig. 1; Fig. 3 is an elevation thereof; Fig. 4 is a vertical section on the line 4—4 of Fig. 1 and Figs. 5, 6, 7 and 8 are face views respectively of four cams used in my machine.

In the drawings 10 represents the bed plate of the machine secured to a suitable support 11 and provided with a preferably integral vertical sleeve 12 suitably located and forming a bearing or support for a hollow shaft 13 which extends therethrough. The shaft 13 carries at the upper end a recessed turn table 15 having an annular flange 16 provided with spaced radial slots 17 for the reception of the headed pins as will appear more clearly hereinafter. The said turn table is formed with a shoulder 18 adapted to rotate and rest upon the upper end of the sleeve 12 to maintain the shaft 13 and its turntable 15 in position against displacement in an axial direction. A disk 19 is rotatably mounted in the recess of the turn table 15 and is provided with collar 20 which may extend into a depression of the

turntable 15 and engage a shoulder 20^a thereof to support and secure said disk in operative position. The disk 19 is further provided with an annular friction rail 21 60 adapted to travel adjacent to the annular flange 16 of the turn table for the purpose to be more clearly described later on in the description. The disk 19 is secured to or forms part of a shaft 22, which projects 65 through the hollow shaft 13, and is rotatably supported therein by means of the collar 20 resting on the shoulder 20^a.

A rod 23^a extends axially of the shaft 22 and carries at its upper end the usual stationary disk or cap forming part of the pin pointing mechanism the remainder of which has been omitted for the sake of clearness, as it forms no part of the present invention. The lower portion of the rod 23^a passes 75 loosely through a bracket 23 and has its free end screw-threaded to receive a hand nut 23^b, a coil spring 23^c surrounding said rod between the nut 23^b and the bracket 23. Thus, by rotating the nut 23^b, the tension 80 of the spring 23^c may be increased or diminished and the pressure of the cap or disk on the pins likewise adjusted to insure the proper rolling of the pins during sharpening. 85

Gear wheels 24 and 25 are fastened on the lower portions of the shafts 13 and 22 and mesh respectively with intermediate pinions 26 and 27 journaled on studs 28 and 29 carried by the bed plate 10 and support 11. 90 These intermediate pinions 26 and 27 mesh with gear wheels 30 and 31, each secured to a shaft 32 rotatably mounted in a stationary bearing 33 on the support 11 and extending upwardly through the bed plate 10. At its 95 upper end the shaft 32 carries a worm gear 34 arranged to operatively engage with a worm wheel 35 secured to a power or main shaft 36 journaled in suitable stationary bearings located on the bed plate 10. It will 100 be noted that the gear wheel 24, intermediate pinion 26 and gear wheel 30 are so proportioned that the speed of the shaft 13 is slower than that of the shaft 32 while the gear wheel 25, intermediate pinion 27 and 105 gear wheel 31 are of substantially the same size so that the shaft 22 travels at substantially the same speed as the shaft 32. The turn table 15 is therefore rotated at a slower speed than the disk 19, the consequence being that the friction rail 21 will engage the pin heads and rotate each pin about its own 110

axis to sharpen it in the usual way. The mechanism so far described forms no part of my invention and may be of any well known character, for instance of the kind shown in the United States Patent #330,220 issued on November 10, 1885, to Louis A. Fontaine.

The wire 37 from which the pins are formed is fed along between feed rolls 38 and 39, the lower roll 38 being secured to a shaft 40 journaled in stationary bearings 41 and carrying a pinion 42. The upper roll 39 is rotatably mounted on a shaft 43 journaled on an arm 44 pivoted at 45 on a stationary lug 46 on the bed plate 10 and under the influence of a spring 47 mounted in a housing 48. The spring 47 serves to press the rolls 38 and 39 toward each other and permits the upper roll 39 to yield so that wires of different diameter may be accommodated. The tension of said spring 47 may be adjusted by means of the screw 49 and washer 50. The shaft 43 on which the upper roll 39 is mounted also carries a pinion 51 which meshes with the pinion 42. A belt 52 passes over a pulley 53 located on the power shaft 36 and over guide pulleys 54 journaled on a stationary portion of the support 11 and finally over a pulley 55 secured to the shaft 40 and serves to rotate the feed roll 38 and through the medium of the pinions 42 and 51 also rotate the feed roll 39. From the feed rolls 38 and 39 the wire passes into and through a stationary guide 56 and is fed along until its free end is in the space between the gripping dies 57 and 58 which are normally separated to make this possible. The one die 57 is stationary and is mounted in a rigid support 59 secured to or forming part of a bracket 60 carried by a plate 61 in turn fastened to the bed plate 10 by means of bolts 62. The position of the die 57 in the support 59 may be adjusted in the direction of the die's length by means of the set screw 63. The other die 58 is movably or slidably mounted in the rigid support 59 and is actuated toward the die 57 by means of a lever 64 pivoted at 65 upon a lug forming part of or secured to the bracket 60. This lever 64 is provided adjacent to its free end with a screw bolt 66 locked in position by means of a lock nut 67 and arranged to be engaged by a resilient member 68 secured to the bed plate 10. This resilient member 68 carries a roller 69 which is engaged by a cam 70 having spaced peripheral projections 70^a and located on the drive shaft 36 so that as said cam is rotated, the member 68 will be moved against its tension and swing the lever 64 on its pivot, thus causing said lever to move the gripping die 58 toward the die 57 and firmly grip the wire 37 in position to be headed, the pressure of the grip being adjusted by means of the screw bolt 66. This screw bolt

66 is maintained against the member 68 by means of a coil spring 64^a as shown in Fig. 1. The jaw 58 is returned to normal position through the medium of a leaf spring 71 secured to the bed plate by means of a screw bolt 72. A heading plunger 73 is slidably mounted in a block 74 which in turn is provided with a rib 75 movable in a recess of a portion of the bracket 60 so as to be vertically adjustable, being maintained in its adjusted position through the medium of bolts 76. A pin 77 projects from the plunger 73 through a slot 78 in the block 74, said pin engaging a set screw 79 to limit the movement of the plunger in one direction. A spring 80 serves to normally maintain the plunger in a retracted position and to return it to said position. An arm or lever 81 pivoted at 82 on a lug also forming part of the bracket 60 has its one end located adjacent to the heading plunger and its other end in close proximity to a resilient member 83 similar to the member 68 and similarly secured to the bed plate 10. This member 83 also carries near its free end a roller 84 arranged to be engaged by a cam 85 mounted on the drive shaft 36 and provided with a series of spaced projections 86. The arm 81 is maintained in position with its one end against the member 83 by means of a coil spring 87 as clearly shown in Fig. 1. The cutting knife 88 for cutting the wire in proper pin lengths is secured to one end of a lever 89 pivoted at 90 on a stationary projection 91 and extends downwardly with its one surface in engagement with the face of the guide 56 as may be seen by reference to Fig. 2. The opposite end of said lever 89 extends over a cam 92 secured to the power shaft 36, a projecting buffer 93 being provided on said lever 89 for engagement with said cam, and a coil spring 94 serving to maintain said buffer in engagement with the periphery of said cam. A second lever 95 is pivoted at 96 on said projection 91 and carries at its one end an ejector 97, its opposite end being also provided with a buffer 98 arranged to engage a cam 99 also carried by the power shaft 36. A spring 100 similar to the spring 94 maintains the buffer 98 against the periphery of the cam 99.

In operation power is applied to rotate the shaft 36 in any suitable manner, as for instance, by means of a belt and pulley. This causes the feed rolls 38 and 39 to be rotated through the medium of the belt 52, pulleys 53 and 55 and gears 42 and 51 and feeds the wire forward toward the guide 56. The wire is fed through said guide 56 until its end is in the space between and slightly beyond the gripping dies 57 and 58 which at this moment are brought together. That is the cam 70 is rotated and one of the projections 70^a engages roller 69 and forces

the member 68 against the screw bolt 66, thus swinging the lever 64 on its pivot and sliding the die 58 toward the die 57 so as to firmly grip the end of the wire. As the roller 69 continues to ride on the projection 70^a, the grip on the wire is maintained while the first heading blow is struck as follows: As soon as the wire is thus gripped one of the projections 86 of the cam 85 engages the roller 84 and forces the member 83 against the lever 81 and swings said lever on its pivot 82. The opposite end of said lever is then caused to move toward the gripping dies and moves the heading plunger 73 against the end of the wire so as to form a small head thereon, the contact between said wire end and plunger being in the nature of a blow owing to the sharp outline of the projections 86. Immediately after the blow has been delivered as just described, the roller 69 leaves the projection 70^a of the cam 70 so as to separate the gripping dies and release the wire. This wire is thus immediately fed forward a slight distance or until the roller 69 engages the next projection 70^a on the cam 70 whereupon the wire is again gripped and held as before. By this time the next projection 86 of the cam 85 will again operate the arm 81 as before described which in turn will cause the heading plunger to be again actuated to deliver a second blow to the pin head and thus slightly enlarge said head. The wire will now again be released and fed forward again after which the projections 70^a and 86 will again operate the respective cooperating arms to first grip the wire and then cause the plunger 73 to deliver a third and final blow to finish the head of the pin. Owing to the fact that the gripping dies are respectively mounted and movable in the rigid support 59 a perfect rigid resistance to each blow of the heading punch is secured. As this point in the operation is reached the cam 92 will swing the arm 89 to lower the knife 88 and cut the wire the desired length whereupon the headed pin will ordinarily drop by gravity from the dies. At the same time or an instant thereafter the cam 99 will actuate the arm 95 to lower the ejector 97 so as to force the headed pin downward out of the dies if it has become stuck therein. The said pin, after it leaves the dies, rests with its one end on a shelf 56^a and its other end in one of the radial slots 17 of the turn table 15 which carries it away to be pointed. It will be seen that the knife 88 in descending covers the mouth of the guide 56 and thus prevents the wire from being fed as the headed pin is being projected, the belt 52 meantime slipping over the pulleys 53, 54 and 55 so as to prevent buckling of the wire as this blocking of the guide 56 occurs. This belt 52 also slips over said pulleys as just

described during the periods of time the wire is gripped, a certain slight looseness being provided in said belt for this purpose. After the headed pin has been ejected the operation is repeated, it being understood that the pin will ordinarily drop by gravity on to the turn table, the ejector being provided as a safeguard against sticking from any cause. It will be seen that the heading operation takes place immediately above the turn table 15 and rotatable disk 19 constituting a part of the pointing mechanism and that the headed pin is delivered directly to this portion of the pointing mechanism without being first delivered to an intermediate element. There is thus no intermediate mechanism to get out of order and to cause trouble and the number of parts is reduced and the machine rendered more compact than before.

The openings in the plate 61 through which the bolts 62 pass are slightly elongated so that by loosening said bolts the plate 61 may be shifted and its position adjusted to change the length of the pins. That is, said plate 61 is moved toward or away from the rolling table by means of the screw 61^a and is secured in its adjusted position by means of the screw 61^b. It will be seen that the heading and feeding mechanism, together with the gripping jaws are all carried by this plate 61 which may thus be removed and replaced as a single element without disturbing the remainder of the mechanism.

By providing the resilient members 68 and 83 for engagement by the respective cams 70 and 85 instead of having said cams directly engage the arms 64 and 81, all lateral strain is removed from said arms as the cams reach the successive operative stages. As before stated, by adjusting the position of the screw bolt 66 the pressure of the gripping die 58 may be regulated, that is, by unscrewing said bolt the pressure is increased and by screwing it up the pressure is decreased.

Various modifications may be made within the scope of the claims without departing from the spirit of my invention.

I claim:

1. In a pin making machine, mechanism for heading a pin, rotatable means forming part of a pin pointing mechanism and gripping dies located above and extending over a portion of said rotatable means, one of said dies being movable relatively to the other in a direction at an angle to the axis of the rotatable means, said dies being adapted to grip said pin during the heading operation and to free the headed pin and permit it to drop by gravity directly to said rotatable means.

2. In a pin making machine, mechanism for heading a pin, means for feeding the

blank to said heading mechanism, gripping dies, one of which is movable relatively to the other in a direction at an angle to the direction in which the blank is fed, said dies being adapted to grip the pin during the heading operation and to free the headed blank, means for actuating said dies, means for cutting said blank to the desired length and movable means forming part of a pointing mechanism and extending beneath said dies for receiving the headed blank after it has been cut and freed, said movable means being movable in a plane parallel with the direction in which the blank is fed.

3. In a pin making machine, mechanism for heading a pin, rotatable means forming part of a pin pointing mechanism, gripping dies located above and extending over a portion of said rotatable means, one of said dies being movable relatively to the other in a direction at an angle to the axis of the rotatable means, said dies being adapted to grip said pin during the heading operation and to free the headed pin and permit it to drop by gravity directly to said rotatable means, an ejector adapted to assist the gravital movement of the headed pin toward the rotatable means, and means for actuating said ejector.

4. In a pin making machine, mechanism for heading a pin, rotatable disks forming part of a pin pointing mechanism rotatable in a horizontal plane, one of said disks being provided with radial slots, means for feeding the blank to the heading mechanism in a direction parallel with the faces of said disks and gripping dies located above said disks, one of said dies being movable relatively to the other in a horizontal direction, said dies being adapted to grip the pin during the heading operation and to free the headed pin and permit it to drop by gravity into a radial slot of the disks.

5. In a pin making machine, a plunger for heading a pin, an arm arranged to operate said plunger, a cam located adjacent to the end of said arm, a resilient member separate from said arm mounted on a stationary portion of said machine and extending between said cam and the end of said arm, and means for operating said cam to cause it to engage said resilient member and move the same against its tension to actuate said arm.

6. In a pin making machine, means for heading a pin, mechanism for gripping the pin during the heading operation, an arm arranged to operate said gripping mechanism, a cam located adjacent to the end of said arm, a resilient member separate from said arm mounted on a stationary portion of said machine and extending between said cam and the end of said arm and means for operating said cam to cause it to engage said resilient member and move the same against its tension to actuate said arm.

7. In a pin making machine, means for heading a pin, mechanism for gripping the pin during the heading operation, an arm arranged to operate said gripping mechanism, a device on said arm for varying its throw, a cam located adjacent to said device, a resilient member separate from said arm mounted on a stationary portion of said machine and extending between said cam and said device and means for operating said cam to cause it to engage said resilient member and move it against its tension to actuate said arm.

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

JAMES KELLEY.

Witnesses:

PETER ALLISON,
WILBUR G. MANCHESTER.