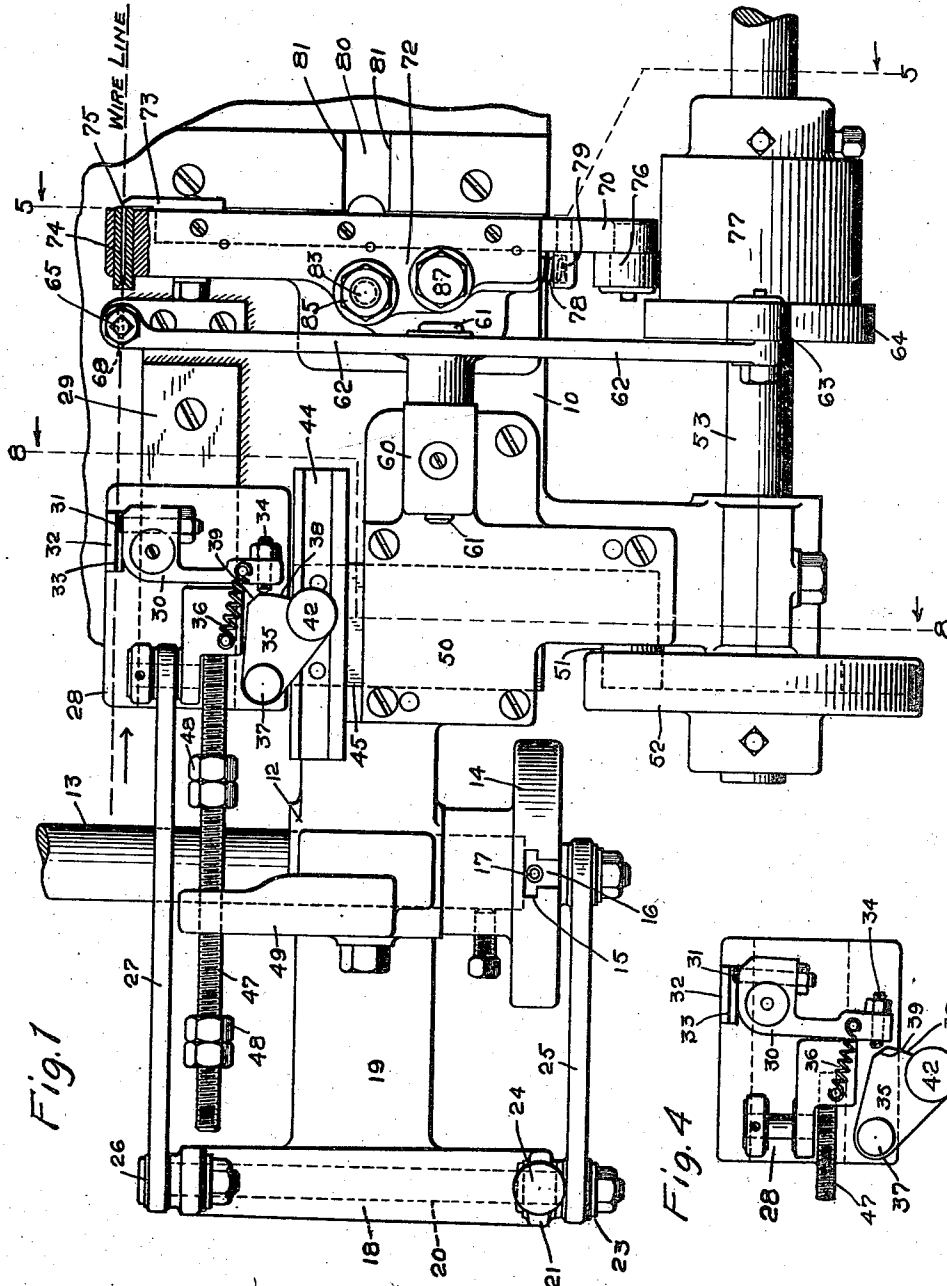


J. G. LEPPER & W. W. MANVILLE.
WIRE FEEDING MECHANISM.
APPLICATION FILED FEB. 3, 1911.

1,014,829.

Patented Jan. 16, 1912.

5 SHEETS—SHEET 1.



WITNESSES:
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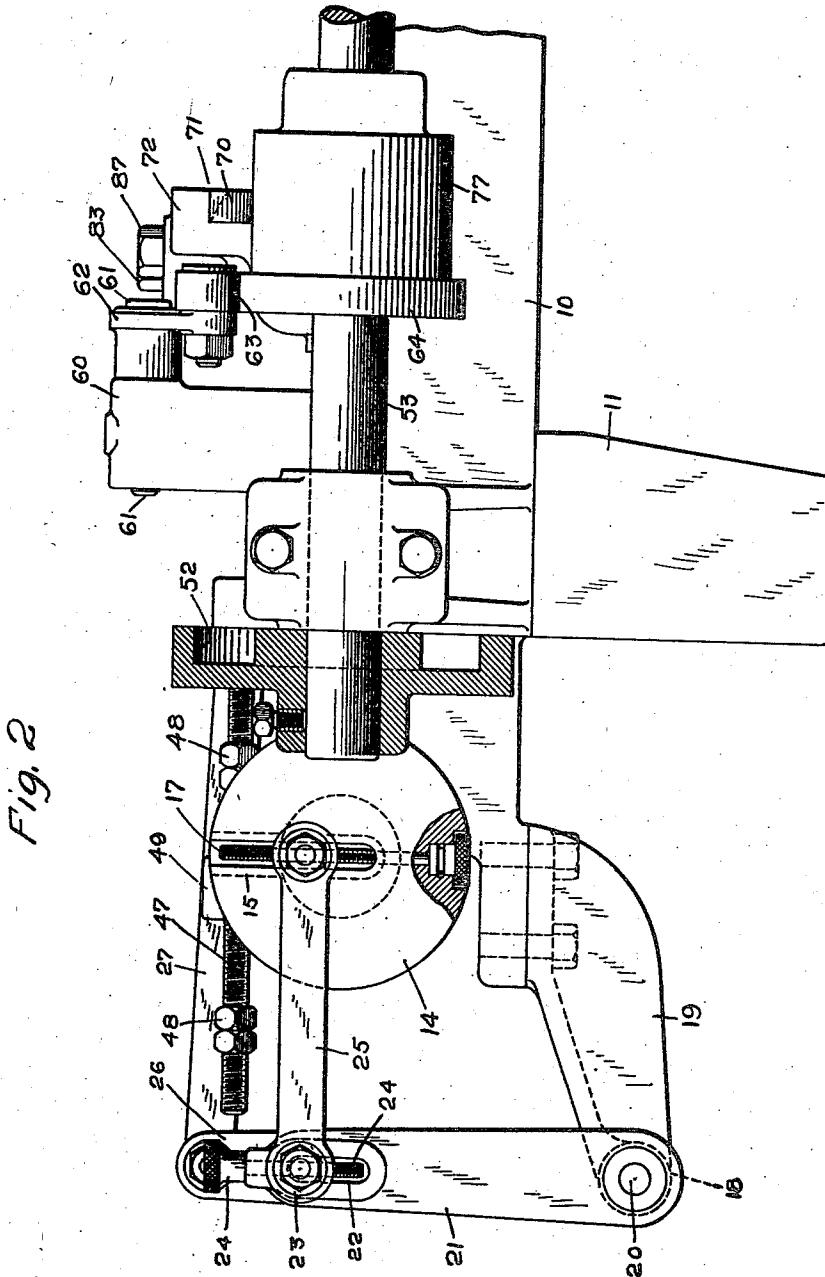


Fig. 2

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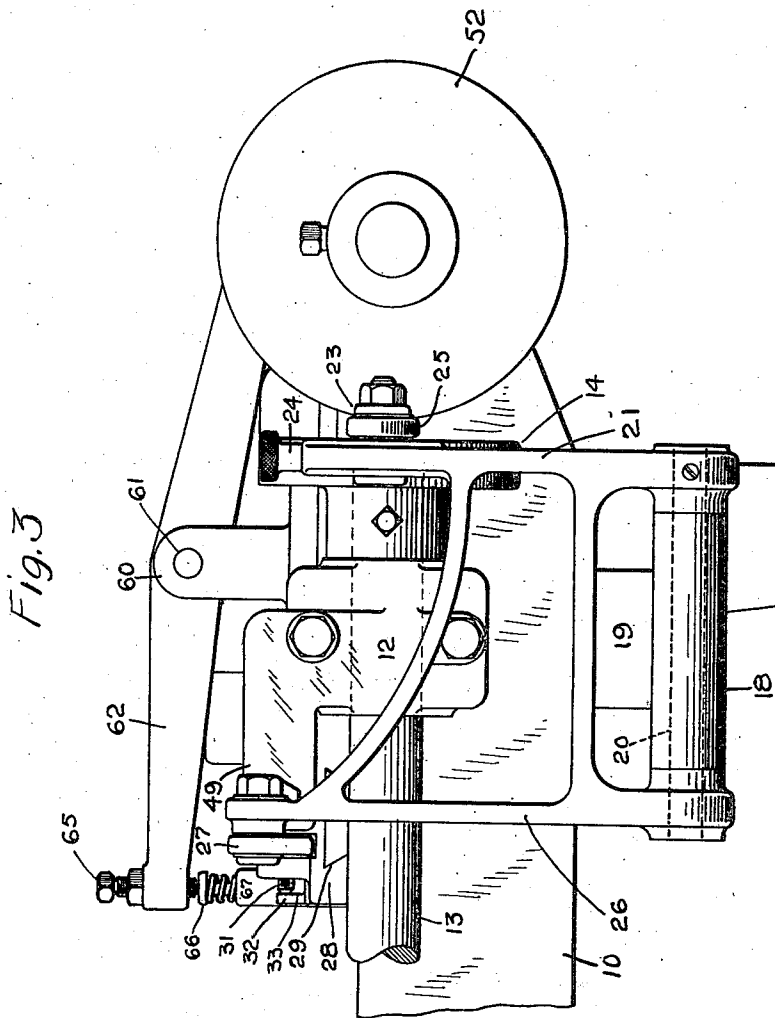
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5 SHEETS—SHEET 3.



WITNESSES:

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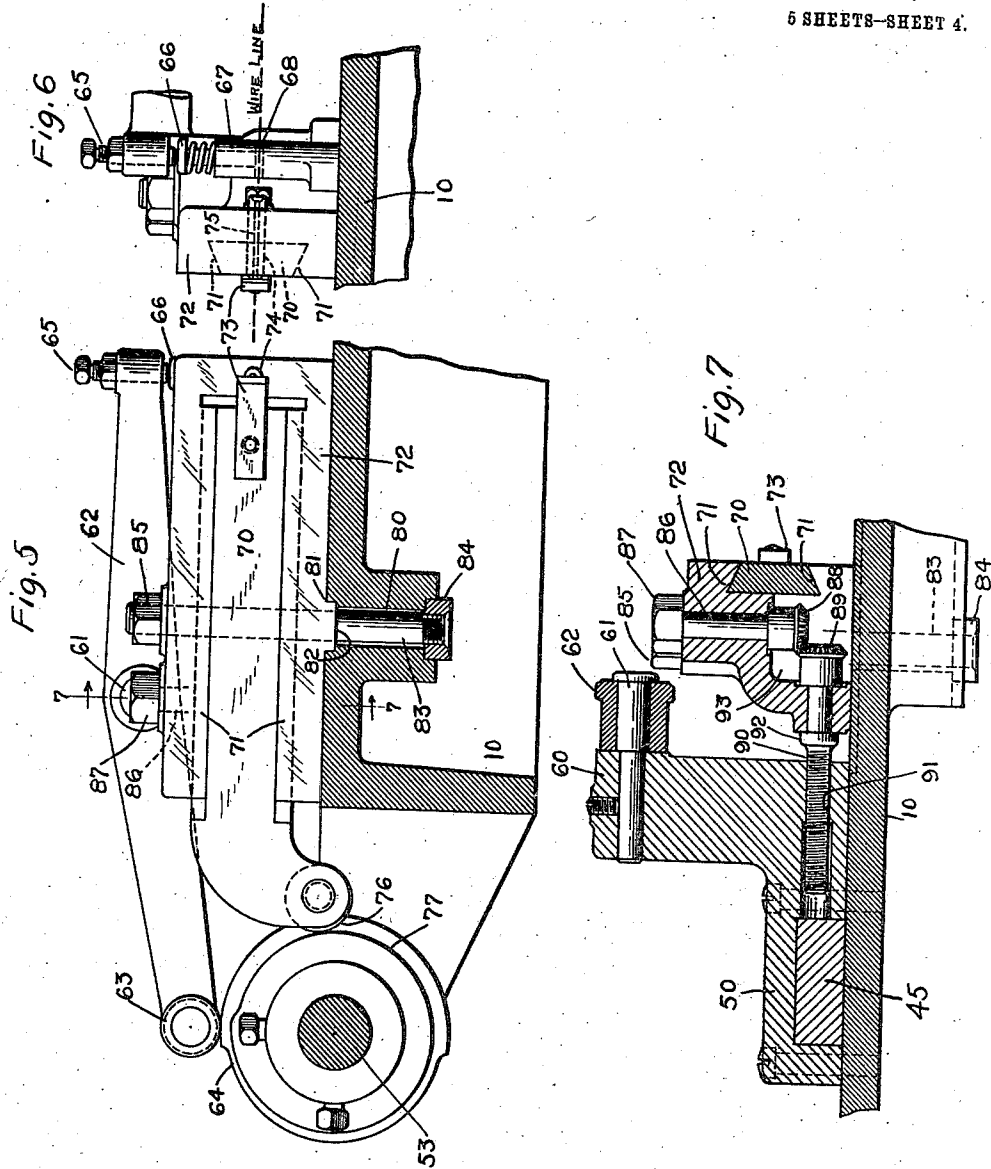
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5 SHEETS—SHEET 4.



WITNESSES:

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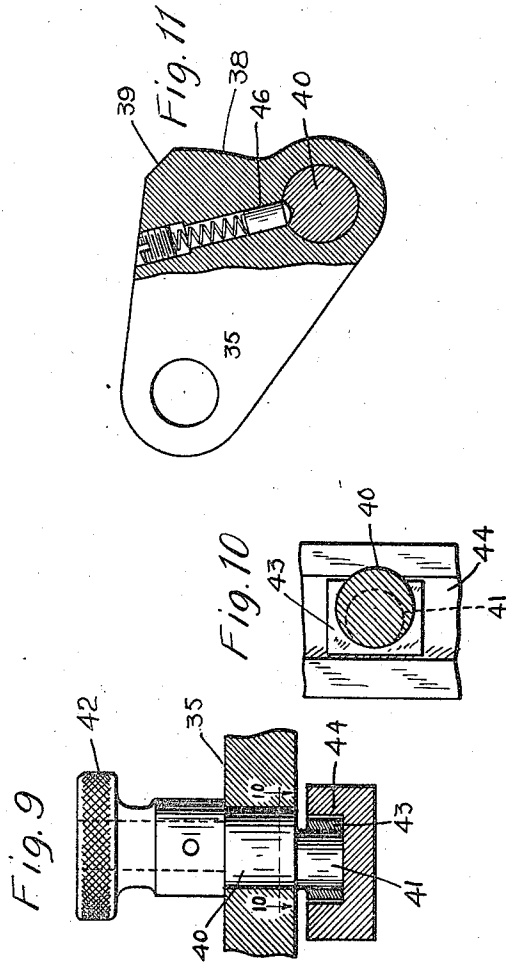
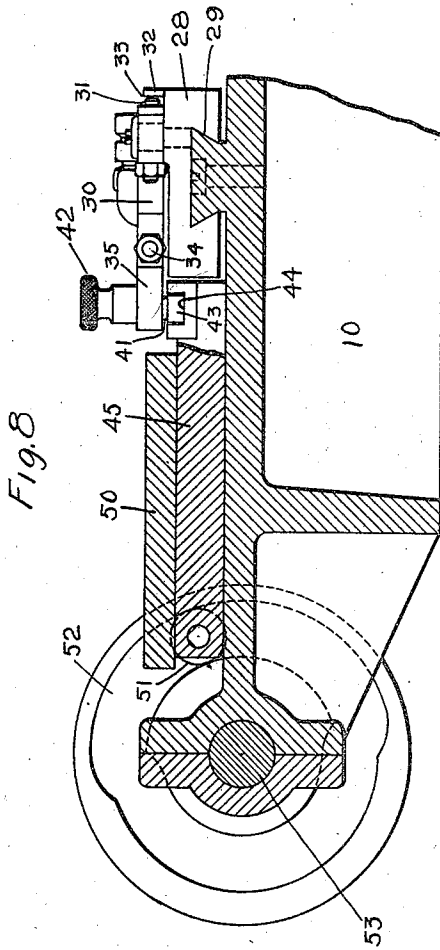
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5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

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WIRE-FEEDING MECHANISM.

1,014,829.

Specification of Letters Patent.

Patented Jan. 16, 1912.

Application filed February 3, 1911. Serial No. 606,405.

To all whom it may concern:

Be it known that we, JOHN G. LEPPER and WILLIAM W. MANVILLE, citizens of the United States, residing at Waterbury, county of New Haven, State of Connecticut, have invented an Improvement in Wire-Feeding Mechanism, of which the following is a specification.

This invention relates to certain new and useful improvements in wire feeding mechanism.

The invention has for its object the provision of improved means whereby the wire may be intermittently fed and cut in predetermined lengths.

A further object is to provide means for varying the stroke of the feeding mechanism.

A further object is to provide means whereby the machine may be adapted to operate on wires of different gage.

A further object is to provide means whereby the feeding mechanism may be made temporarily inoperative.

A further object is to provide feeding, holding, and cutting mechanisms arranged to act in time with each other, whereby the wire may be successively advanced the desired distance, held and finally severed into the predetermined lengths.

The invention will be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawings:—Figure 1 is a plan view illustrating a wire feeding and cutting off mechanism embodying our invention. Fig. 2 is a front view, parts being shown in section. Fig. 3 is an end view. Fig. 4 is a detail plan view of the wire feeding slide and its adjuncts. Fig. 5 is a section on the line 5—5 in Fig. 1, illustrating the wire holding and cutting devices. Fig. 6 is an end view of the wire holding and cutting devices, the bed of the machine being shown in section. Fig. 7 is a section on the line 7—7 in Fig. 5. Fig. 8 is a section on the line 8—8 in Fig. 1. Figs. 9, 10, and 11, are detail views illustrating portions of the wire feeding device and the operating cam therefor, Fig. 10 being a section on line 10—10, Fig. 9.

Referring to the drawings, 10 designates the bed of the machine supported upon suitable standards 11 and provided with a bear-

ing 12 for an operating shaft 13. Secured to said shaft 13 is a crank disk 14 provided with a radial T-shaped slot 15 arranged to guide a correspondingly shaped slidable block 16 which is engaged by an adjusting screw 17 rotatively mounted in the crank disk 14. Said screw extends diametrically across the disk and projects at one end into said slot, extending longitudinally of the latter, the other end being provided with a milled head, whereby the screw may be conveniently rotated. Mounted in a bearing 18 carried by a bracket 19 bolted or otherwise secured to the bed 10, is a rock shaft 20 to which is secured a lever 21 provided with a slot 22 near its upper end. A block 23 is mounted in said slot 22 and may be adjusted therein by means of a thumb-screw 24 passing therethrough. The block 23 is connected with the block 16 by means of the link 25, whereby rotation of the shaft 13 will effect an oscillation of the lever 21, and a corresponding movement of the shaft 20. To the opposite end of shaft 20 is secured a lever 26, connected by means of a link 27 with the slide 28 which is mounted upon a dovetailed guide 29 and free to reciprocate thereon. The levers 21 and 26 are connected by cross braces, whereby the two levers are united in a single unitary construction.

Pivotaly mounted upon the slide 28 is a wire-gripping dog 30 of approximate L-shape, one arm thereof being provided with a gripping member 31 coöperating with an abutment 32. The gripping member is preferably in the form of a screw, whereby the same may be adjusted to securely grip wire of any gage. The abutment 32 is provided with a shoulder 33 lying in the line of the wire feed and forming a support for the wire when not engaged by the dog. The other arm of the dog 30 is provided with an abutment screw 34 normally held in contact with an operating cam 35 by means of a spring 36. The cam 35 is pivoted at 37 to the slide 28 and is provided with the curved cam surface 38 terminating in a beveled shoulder 39. The cam 35 is shown as of approximately triangular form and provided at one corner with a socket in which is mounted a short shaft 40 provided with a depending eccentric finger 41 and a milled head 42. Said finger engages an opening formed in a block 43 mounted to reciprocate

cate in a guide channel 44 which in turn is mounted upon a slide 45. The shaft 40 is normally prevented from rotation by means of a spring-pressed locking dog 46 engaging a suitable notch in said shaft. The reciprocation of the slide 28 is limited by means of a threaded bar 47 secured to said slide and provided with stops, as adjusting nuts 48 adapted to engage an abutment 49 supported by the bed of the machine in any suitable or preferred manner. The slide 45 is mounted in a suitable guide 50 carried by the bed of the machine, and provided at its forward end with a roller 51 engaging the cam groove of a cam 52 secured to a second shaft 53.

Mounted in a suitable bearing 60, preferably carried by the guide 50, is a pivot stud 61 which supports the lever 62. One end of said lever is provided with a roller 63 which engages a cam 64 secured to the shaft 53. The other end of said lever is provided with an adjustable screw 65 adapted to engage the head of a spring supported gripping member 66 working in a vertical socket or guide 67 which intersects the transverse guide bore 68 through which the wire passes. The arrangement is such that the member 66 is held down in engagement with the wire passing through the bore 68 so as to prevent retrograde movement of the wire when the slide 28 is retracted.

The cutting mechanism comprises a cutting slide 70 mounted to reciprocate between dovetailed shoulders 71 formed in one face of a guide 72 adjustably secured to the bed of the frame and provided at its one end with a cutter 73 cooperating with a removable tubular member 74 to form a shear. The member 74 is located in a suitable socket in one end of guide 72 and provided with a bore 75 through which the wire is passed, and members with bores of different diameters are substituted, one for the other, to conform to the gage of the wire being operated upon. The slide 70 is provided at its rearward end with a roller 76 engaging a cam 77 whereby said slide is moved forward to shear the wire. Said slide is normally retracted and held in engagement with said cam by means of a spring 78 one end of which engages the guide 72 and the other end a socket 79 extending laterally from said slide.

The bed 10 is provided with a guide slot 80 the edges of which are shouldered at 81 to receive a depending rib 82 of the guide 72. Extending through said guide and projecting into the slot 80 is a locking screw 83 provided with a head 84 adapted to bind against the under edges of said slot, and a nut 85, whereby the guide 72 may be rigidly held against movement. Extending vertically through the guide 72 is a shaft 86 provided at its upper end with an angular head

87 and at its lower end with a bevel gear 88 meshing with a similar gear 89 secured to a screw shaft 90 which shaft engages a correspondingly threaded socket 91 carried by the bed of the machine. An annular shoulder 92 is formed on the shaft 90 and one wall of the chamber 93 in which the gears 88 and 89 are located, is clamped between said shoulder and said gear 89, whereby the position of the guide 72 may be varied by the operation of said shaft 90.

The operation is as follows:—The wire is first passed through the machine in any suitable manner along the dotted line bearing the legend "Wire line" (Figs. 1 and 6), passing between the gripping member 31 and the abutment 32. Just before the slide 28 moves away from the guide 67 the slide 45 is retracted and by reason of its engagement with the cam 35, swings the latter so as to bring the beveled portion 39 opposite the abutment screw 34, thereby permitting the spring 36 to hold the dog 30 in a position to allow the member 31 and the abutment 32 to slide along the wire without gripping the latter (see Fig. 4). The parts are so timed that as the movement of the slide 28 is reversed and it starts on its feeding movement to the right (Fig. 1) the slide 45 is moved toward slide 28, causing the guide channel 44 to rock the cam 35 and bring the curved surface of the latter into engagement with the screw 34, thereby moving the gripping dog 30 in opposition to the spring 36, causing the wire to be firmly gripped and held between the member 31 and the abutment 32. As the slide 28 advances in this direction the guide channel 44 permits of a corresponding movement of the cam 35, thereby causing dog 30 to maintain a firm grip upon the wire and advancing the latter through the guide bore 68 and tubular member 74. Just as soon as the slide 28 reaches the limit of its feeding movement to the right (Fig. 1) the slide 45 is again retracted allowing the spring 36 to move the gripping dog 30 out of engagement with the wire to permit of the return movement of the slide 28 to the left. At the same instant the cam 64 will rock the lever 62 so as to bring the screw 65 into engagement with the spring pressed member 66, depressing said member and causing it to impinge against the wire in the bore 68 so as to hold said wire against movement as the slide 28 moves to the left (Fig. 1). Immediately after the wire is gripped by the member 66 the slide 70 is operated by the cam 77 to shear off the length of the wire protruding beyond the tubular member 74.

It will be noted that the stroke of the slide 28 may be varied by adjusting the nuts 48 with relation to the abutment 49 and by adjusting the position of the block 16 with relation to the center of the crank disk 14, and

further by adjusting the block 23 in the slot 22. Blocks 16 and 23 are adjusted by the screws 17 and 24 respectively, as heretofore described. When the stroke of the slide 5 28 is varied there must be a corresponding variation in the relative position of the shearing device. This adjustment is accomplished by loosening nut 85 on screw 83 and then rotating shaft 86 by means of a 10 wrench or other suitable device. The effect of such rotation is to cause a corresponding rotation of the screw shaft 90, thereby moving the guide 72 toward or away from the guide 50, as the case may be. After the desired adjustment is secured the guide is 15 again locked by tightening up nut 85. If for any reason it is desired to interrupt the feed of the wire without stopping the machine it is only necessary to rotate the shaft 20 40 by means of head 42 so as to cause the eccentric finger 41 to move the cam 35, thereby permitting the screw 34 to pass off of the beveled shoulder 39. This will allow the spring 36 to draw the dog 30 back in the 25 position illustrated in Fig. 4 so that it cannot engage the wire, and the cam may be held in this position as long as desired.

We claim as our invention:—

1. In a wire feeding mechanism, a feeding 30 ing slide, means for actuating the same, a lever pivoted to said slide and having one end arranged as a wire gripping member, a cam pivoted to said slide, means for holding the other member of said lever normally in 35 engagement with said cam, and means independent of said slide and its operating means for oscillating said cam, whereby said lever is rocked.

2. In a wire feeding mechanism, a feeding 40 slide, means for actuating the same, a lever pivoted to said slide and having one end arranged as a wire gripping member, a cam pivoted to said slide, means for holding the other member of said lever normally in 45 engagement with said cam, and means independent of said slide and its operating means for oscillating said cam, whereby said lever is rocked, and means carried by said cam for varying the length of the oscil- 50 lations, whereby said cam is rendered inoperative.

3. In a wire feeding mechanism, a feeding slide, means for actuating the same, a lever 55 pivoted to said slide and having one end arranged to directly grip a wire, a cam pivoted to said slide, means engaging the other member of said lever to hold the latter normally in engagement with said cam, and means movable at an angle with relation to 60 said feeding slide for periodically oscillating said cam.

4. In a wire feeding mechanism, a feeding slide, means for actuating the same, a lever 65 pivoted to said slide and having one end arranged as a wire gripping member, a cam

pivoted to said slide, means for holding the other member of said lever normally in engagement with said cam, a second slide normally engaging said cam, and movable at an angle with relation to said feeding slide, 70 and means for actuating the second slide.

5. In a wire feeding mechanism, a feeding slide, means for actuating the same, a lever pivoted to said slide and having one end arranged as a wire gripping member, a 75 cam pivoted to said slide, means for holding the other member of said lever normally in engagement with said cam, a second slide provided with a guide way normally in engagement with said cam, and means for 80 periodically reciprocating the second slide.

6. In a wire feeding mechanism, a feeding slide, means for actuating the same, a lever pivoted to said slide and having one end arranged as a wire gripping member, a 85 cam pivoted to said slide, means for holding the other member of said lever normally in engagement with said cam, a second slide provided with a grooved guide way, means for reciprocating the second slide, and a de- 90 pending pin carried by said cam and working in said grooved guide way.

7. In a wire feeding mechanism, a feeding slide, means for actuating the same, wire gripping means carried by said slide, a tri- 95 angular cam for operating said gripping means and pivoted at one corner to said slide, and means engaging another corner of said cam to actuate the same.

8. In a wire feeding mechanism, a feed- 100 ing slide, means for actuating the same, wire gripping means carried by said slide, a triangular cam pivoted at one corner to said slide, a second slide in engagement with another corner of said cam, and means for ac- 105 tuating the second slide.

9. In a wire feeding mechanism, a feeding slide, means for actuating the same, wire gripping means carried by said slide, a tri- 110 angular cam pivoted at one corner to said slide, a second slide provided with a guide way, means for connecting another corner of said cam with said guide way, and means for actuating the second slide.

10. In a wire feeding mechanism, a feed- 115 ing slide, means for actuating the same, wire gripping means carried by said slide, a cam also carried by said slide and controlling said gripping means, a shaft mounted in said cam and provided with an eccentric 120 finger, a second slide provided with a guide way to receive said finger, and means for periodically operating the last mentioned slide.

11. In a wire feeding mechanism, a feed- 125 ing slide, means for actuating the same, a lever pivoted to said slide and having one end arranged as a wire gripping member, a cam pivoted to said slide, means for holding the other member of said lever normally in 130

engagement with said cam, a second slide, means carried by said cam for operatively engaging the second slide, means for adjusting said connection to vary the length of oscillation of said cam, whereby the latter is rendered inoperative, and means for actuating the second slide.

12. In a wire feeding mechanism, a feeding slide, means for actuating the same, a lever pivoted to said slide and having one end arranged as a wire gripping member, a cam pivoted to said slide, means for holding the other member of said lever normally in engagement with said cam, a second slide provided with a grooved guide way, a pin carried by said cam and engaging said guideway, means for adjusting the position of said pin in said guideway to vary the throw of said cam, and means for actuating the second slide.

13. In a wire feeding mechanism, a feeding slide, means for actuating the same, wire gripping means carried by said slide, a cam also carried by said slide and controlling said wire gripping means, a second slide provided with a grooved guide way extending parallel with the line of movement of said feeding slide, means for actuating the second slide, and a shaft mounted in said cam and provided with an eccentric finger engaging said guide way.

14. In a wire feeding mechanism, a feeding slide, means for actuating the same, wire gripping means carried by said slide, a cam also carried by said slide and controlling said wire gripping means, a second slide provided with a guide way, a shaft mounted in said cam and provided with a finger engaging said guide way, means for normally preventing rotation of said shaft, and means for periodically operating the second slide.

15. In a wire feeding mechanism, a feeding slide, means for actuating the same, wire gripping means carried by said slide, a cam also carried by said slide and controlling said wire gripping means, a second slide arranged to move at right angles to the feeding slide and provided with a guide way, a shaft mounted in said cam and provided with a finger engaging said guide way, means for normally preventing rotation of said cam, and means for periodically operating the second slide.

16. In a wire feeding mechanism, a feeding slide, means for actuating the same, a lever pivoted to said slide and having one end arranged as a wire gripping member, a cam pivoted to said slide, means for holding the other member of said lever normally in engagement with said cam, means for adjustably limiting the movement of said slide, and means independent of the slide and its operating means for periodically oscillating said cam.

17. In a wire feeding mechanism, a feeding slide, means for actuating the same, a lever pivoted to said slide and having one end arranged as a wire gripping member, a cam pivoted to said slide, means for holding the other member of said lever normally in engagement with said cam, means for adjustably limiting the movement of said slide, a second slide, means for actuating the same, and means for adjustably connecting the cam to said second slide.

18. In a wire feeding mechanism, a feeding slide, wire gripping means carried thereby, a crank disk, a radially adjustable block mounted in said crank disk, a link connected at one end with said block, a lever connected with the other end of said link, and an operating lever for said slide operatively connected with the first mentioned lever.

19. In a wire feeding mechanism, a feeding slide, wire gripping means carried thereby, a crank disk, an operating lever, a link adjustably connected at its ends to said disk and lever respectively, a second lever operatively connected with said operating lever, and connections between the second lever and said slide.

20. In a wire feeding mechanism, a feeding slide, wire gripping means carried thereby, an operating lever pivotally mounted at one end and having a slot at the other end, a second lever operatively connected with said operating lever, and connections between the second lever and said slide, a crank disk, a link having one end connected with said crank disk, and an adjustable member mounted in the slot of said operating lever with which the other end of said link is connected.

21. In a wire feeding mechanism, a feeding slide, wire gripping means carried thereby, a crank disk, an operating lever, a link connecting said crank disk and lever, a second lever operatively connected with said operating lever, connections between said second lever and the slide, and means for adjusting the ends of said link relative to the center of said disk and the pivot of said operating lever.

22. In a wire feeding mechanism, a feeding slide, wire gripping means carried thereby, an operating lever pivotally mounted at one end and having a slot at the other end, means operated by said lever for actuating said slide, a crank disk, a threaded rod mounted in the slotted end of said lever, a block located in said slot and working on said rod, a link having one end connected with said block, and means for adjustably connecting the other end of said link with said crank disk.

23. In a wire feeding mechanism, a feeding slide, wire gripping means carried thereby, an operating lever pivotally mounted at one end and having a slot at the other

end, means operated by said lever for actuating said slide, a crank disk, a threaded rod mounted in the slotted end of said lever, a block located in said slot and working on said rod, a radially adjustable block carried by said crank disk, and a link connected at its ends to said blocks.

24. In a wire feeding mechanism, a feeding slide, means for reciprocating the same, a wire gripping lever pivoted to said slide, a cam pivoted to said slide for operating said gripping lever, an operating shaft, means actuated by said shaft for oscillating said cam, a guide for the wire, a spring supported holding member working in said guide, and means operated by said shaft for depressing said holding member when the wire is released by said gripping lever.

25. In a wire feeding mechanism, a feeding slide, means for reciprocating the same, a wire gripping lever pivoted to said slide, a cam pivoted to said slide for operating said gripping lever, an operating shaft, means actuated by said shaft for oscillating said cam, a guide for the wire, a spring supported holding member working in said guide, a lever having one end normally in engagement with said holding member, and means carried by said shaft for actuating said lever.

26. In a wire feeding mechanism, a feeding slide, wire gripping means carried there-

by, a cam pivoted to said feeding slide to operate said gripping means, a second slide for actuating said cam, a guide for the second slide, a lever pivoted to said guide, and means operated by said lever for holding the wire when released by said gripping means.

27. In a wire feeding mechanism, a feeding slide, wire gripping means carried thereby, a second slide, means operated by the second slide for actuating said wire gripping means, a guide for the second slide, a lever pivoted to said guide, a wire holding member arranged to intercept the path of movement of one end of said lever, and means for actuating said lever.

28. In a wire feeding mechanism, a feeding slide, means for reciprocating the same, a wire gripping device, a cam pivoted to said feeding slide for actuating the wire gripping device, a slide for operating said cam, a guide for the cam-operating slide, a lever pivoted to said guide, and means operated by said lever for holding the wire when released by said wire gripping device.

In testimony whereof we affix our signatures, in presence of two witnesses.

JOHN G. LEPPER.

WILLIAM W. MANVILLE.

Witnesses:

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RUTH J. MINOR.