Sept. 3, 1940. S. GRIMSHAW 2,213,650

WIRE WORKING MACHINE

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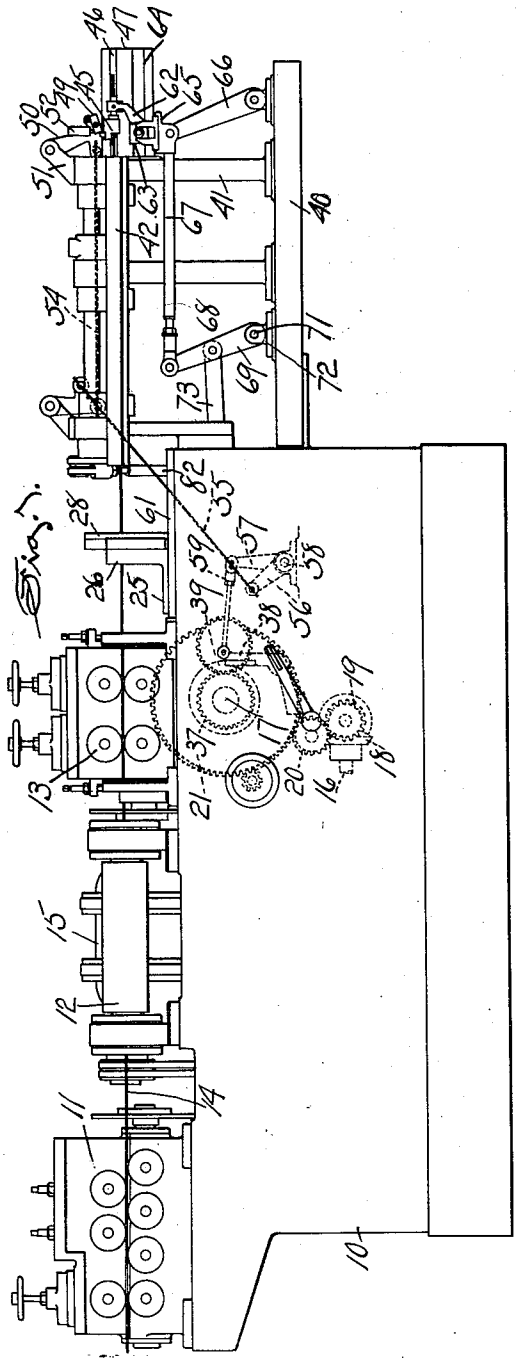


Fig. 1.

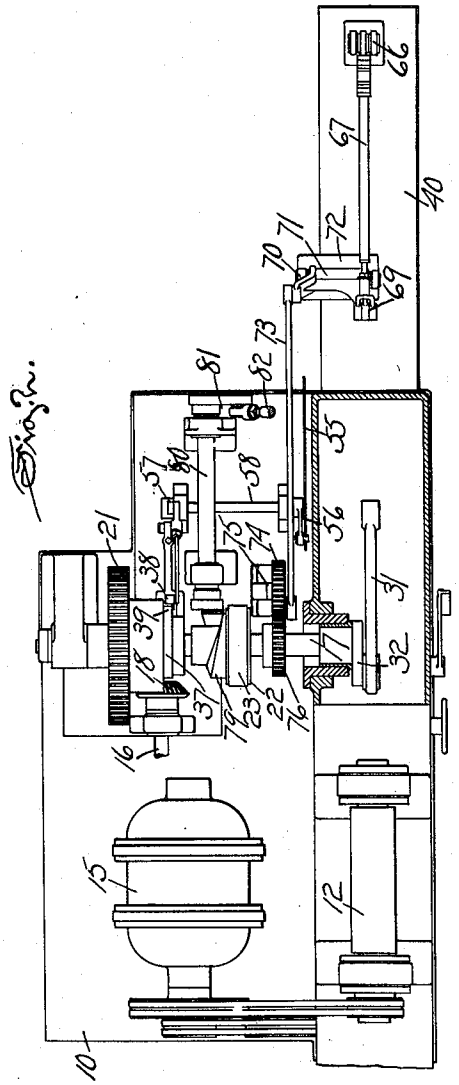


Fig. 2.

INVENTOR
Sidney Grimshaw.
by
Arthur B. Jenkins.
ATTORNEY

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Fig. 3.

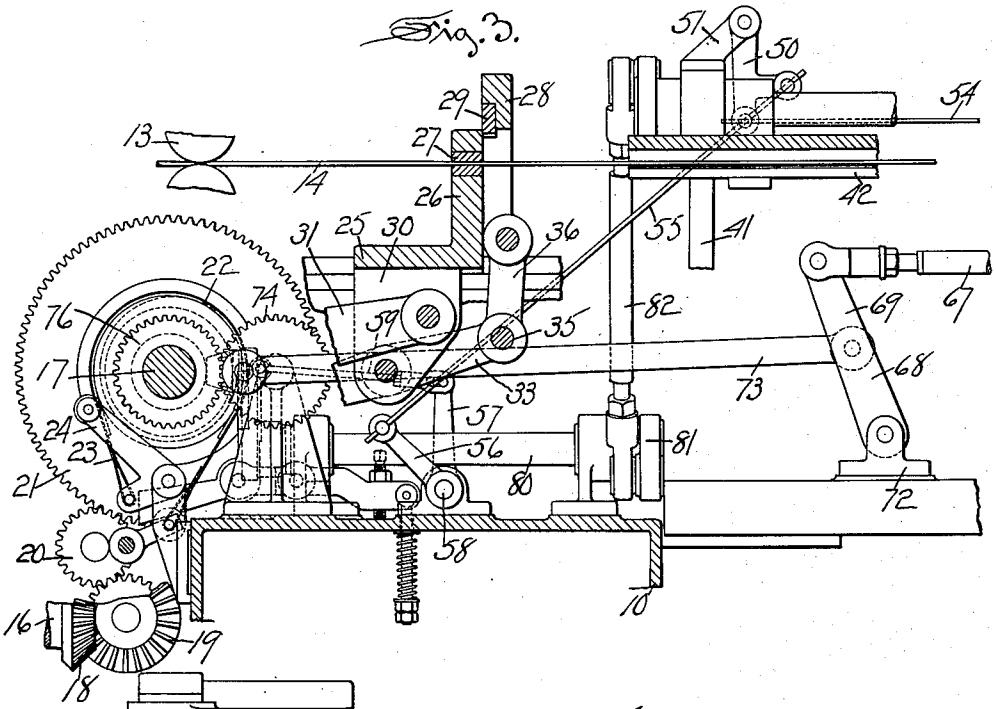
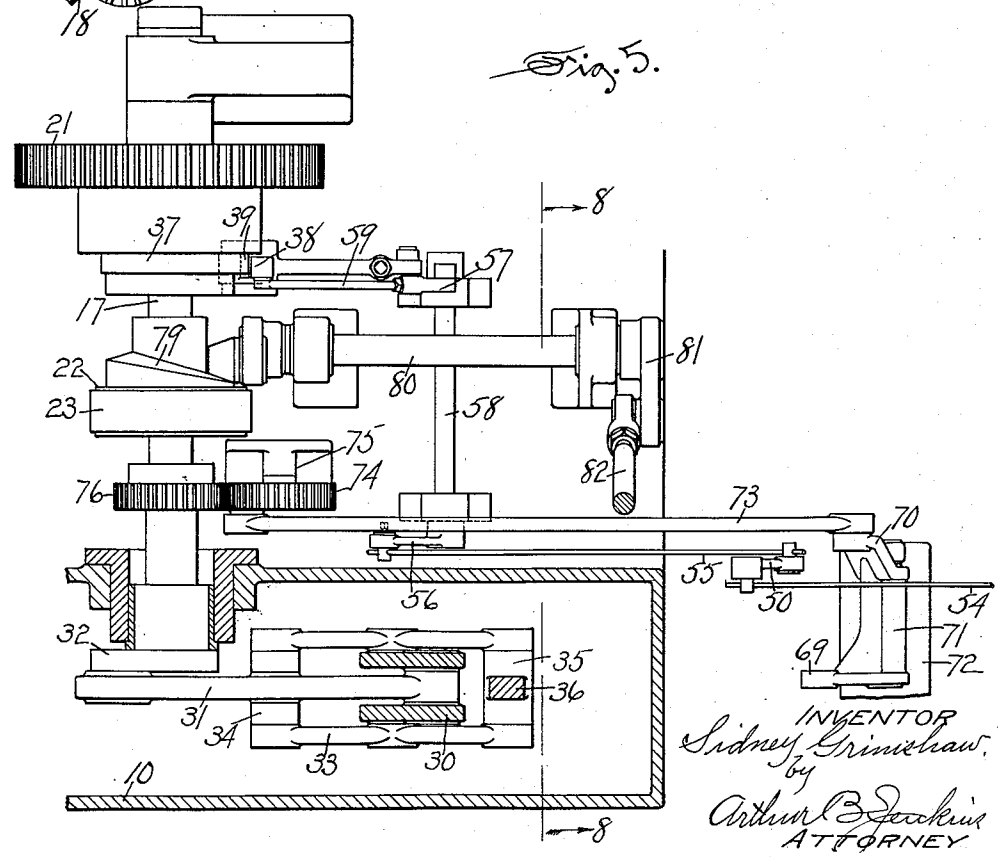


Fig. 5.



INVENTOR
Sidney Grimshaw.
by
Arthur B. Jeakins
ATTORNEY

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WIRE WORKING MACHINE

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Fig. 5.

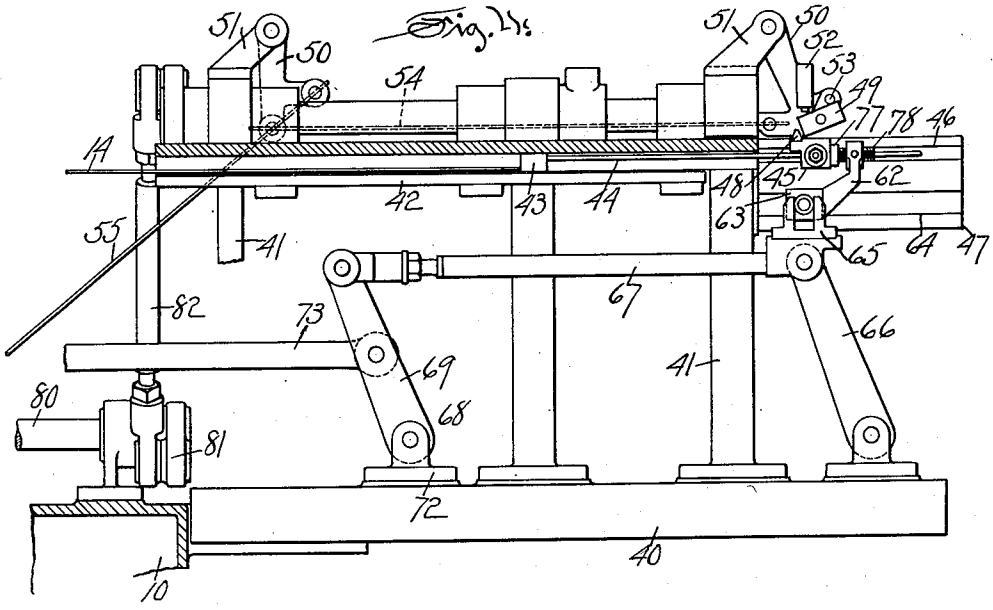
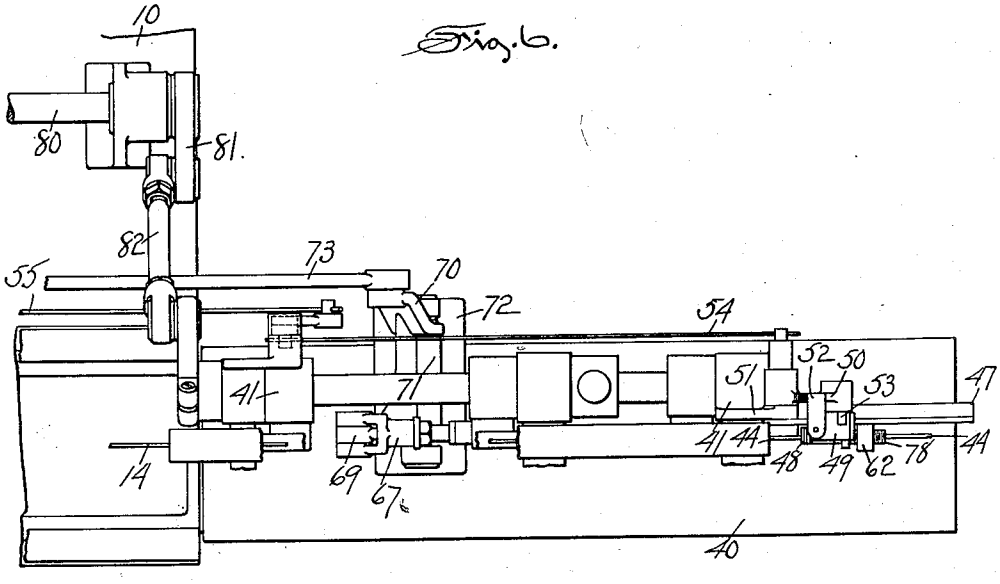


Fig. 6.



INVENTOR
Sidney Grimshaw,
by
Arthur B. Jenkins,
ATTORNEY

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WIRE WORKING MACHINE

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Fig. 7.

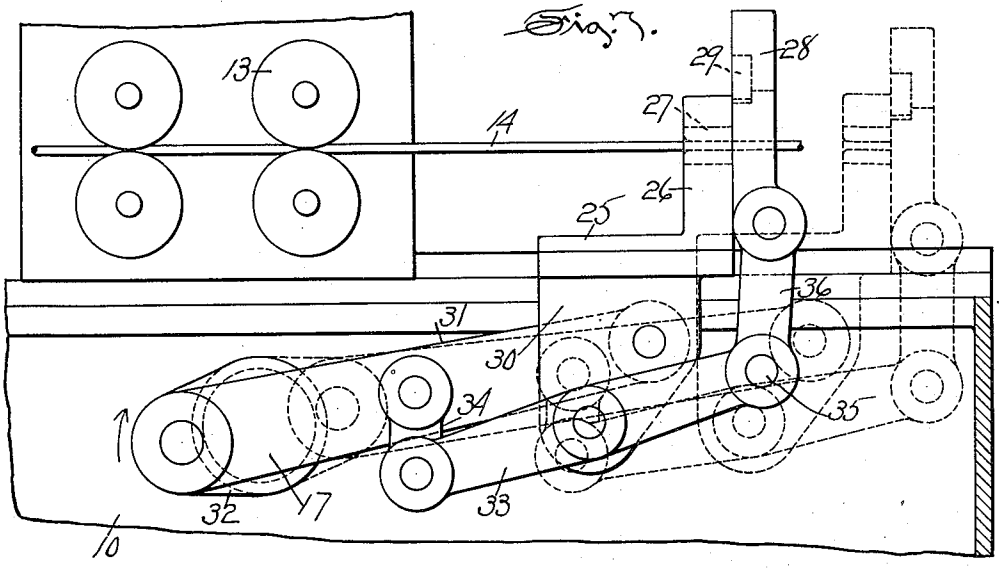
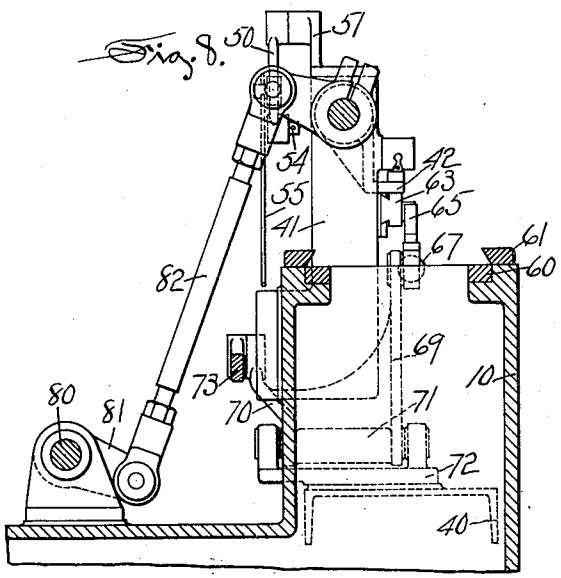


Fig. 8.



INVENTOR
Sidney Grimshaw.
by
Arthur B. Jenkins.
ATTORNEY

Patented Sept. 3, 1940 2,213,650

UNITED STATES PATENT OFFICE

2,213,650

WIRE WORKING MACHINE

Sydney Grimshaw, New Haven, Conn., assignor to The F. B. Shuster Company, New Haven, Conn., a corporation of Connecticut

Application July 15, 1939, Serial No. 284,649

25 Claims. (Cl. 140—140)

My invention relates more particularly to that class of wire working machines which are employed for cutting lengths of wire into comparatively short pieces after being straightened, commonly in the machines of which my invention forms a part and which lengths of wire may be extended from a coil, not herein shown, and an object of my invention, among others, is the production of a machine of simple construction which will operate to rapidly cut the wire into accurately even lengths and particularly without creating marks on the lengths of wire produced in the cutting operation.

One form of a machine embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained is illustrated in the accompanying drawings, in which—

Figure 1 is a view in front elevation of my improved wire working machine with parts omitted as not material to an understanding of the invention.

Figure 2 is a top plan view of a portion of the machine shown in Fig. 1 with parts broken away to show construction.

Figure 3 is a view in vertical lengthwise section of a portion of the machine.

Figure 4 (Sheet 3) is a view in front elevation of a continuation of Fig. 3 showing the cutter tripping mechanism, with parts broken away to show construction.

Figure 5 (Sheet 2) is a top plan view of that part of the machine shown in Fig. 3 with parts broken away to show construction.

Figure 6 (Sheet 3) is a top plan view of that portion of the machine shown in Fig. 4.

Figure 7 is a view in front elevation of the mechanism for operating the cutter, the scale being slightly enlarged over that shown in Fig. 3.

Figure 8 is a view in section on a plane denoted by the dotted line 8—8 of Fig. 5.

My invention has to do more particularly with the mechanism for operating the cutter that severs the wire and to the means for controlling the operations of the cutter and while, in order to disclose enough for a clear understanding of the operation of the machine, some parts not otherwise pertaining to the invention are shown such parts will be only briefly described herein.

In the accompanying drawings the numeral 10 denotes generally the base of the machine comprising the wire straightening and cutting part, this base being of any desired construction and having mounted thereon a straightening set of rolls generally denoted by the numeral 11, together with a straightening arbor 12 and a second set of feed rolls 13, the wire 14 being fed from a coil (not shown) through the set of rolls 11, the arbor 12 and the set of rolls 13 in a manner common to machines of this type. These straightening elements are suitably connected to be driven as from a motor 15, the driving connections being of any suitable character common to machines of this class and for which reason a more detailed showing and description of the operation is omitted herein. A driving shaft 16 is mounted on the base of the machine and is connected in any suitable manner with the motor 15, the showing of such connection also being omitted herein. The connection between this driving shaft 16 and a carrier driving shaft 17 comprises a bevel pinion 18 meshing with a bevel gear 19 in mesh with a pinion 20 the teeth of which are engaged with the teeth of a driving gear 21 secured to the shaft 17, as shown in Fig. 3 of the drawings. The shaft 17 is mounted in any suitable manner on the base of the machine.

A brake drum 22 secured to the shaft 17 is engaged by a brake band 23 secured at one end to the frame of the machine and at its opposite end to a brake operating lever 24 pivotally mounted on the frame, or base as shown in Fig. 3, and operated in any suitable manner as by means of a cam operated by the shaft 17, the cam being timed to operate the brake to slow rotation of the shaft 17 at such times as may be desired, a further and detailed description of this brake mechanism being omitted as not essential to an understanding of the invention, it being noted that the brake is operated to slow the operation of the mechanism for brief periods only, particularly during operation of the clutch hereinafter described. A cutter carrier 25 is mounted for sliding movement on the frame of the machine, this carrier having a cutter die support 26 projecting upwardly therefrom with a cutter die 27 fixed therein, and a cutter slide 28 secured to the support for sliding movement thereon in any suitable manner, this cutter slide having a cutter 29 secured therein, as shown in Fig. 3. The wire 14 is projected through the die 27 and through a slot in the slide 28, the cutter 29 operating in connection with the die 27 to shear off lengths of wire in a manner that will be readily understood. The cutter carrier is reciprocated in a horizontal plane and the slide 28 in a vertical plane by mechanism now to be described.

A bracket 30 projects downwardly from the under side of the carrier 25 this bracket consisting of two side parts, and a carrier reciprocat-

ing lever 31 is pivotally attached to the bracket between said side parts as shown in Figs. 5 and 7. The opposite end of this lever is pivotally attached to a crank 32 secured to one end of the shaft 17. A cutter lever 33 is pivotally connected to the lever 31 intermediate the ends of the latter as by means of links 34. The lever 33 consists of two parts pivotally attached intermediate their ends to opposite sides of the bracket 30, as shown in Fig. 5, the links 34 connecting the two side parts at one end of the lever and a trunnion 35 being pivoted between the side parts of said lever at the opposite ends thereof. A link 36 is secured at one end to said trunnion and its opposite end is pivotally attached to the slide 28, as shown in Fig. 7 of the drawings.

From this construction it will be seen that the carrier 25 and the cutting mechanism has a variable movement gradually increasing and decreasing in rate owing to the crank connection of the lever 31, this rate being greatest at the instant the crank is traveling parallel with a line extending centrally along the lever 31, and to simplify the description this movement will hereinafter be referred to as being substantially horizontal. The rate of travel of the wire through the machine is fixed to be substantially the same as the rate of movement of the cutter mechanism at the moment just referred to and the cutter mechanism is arranged so that the cutting of the wire will take place at this time and when the wire and cutter mechanism are traveling at substantially the same rates of speed so that there will be no crowding of the wire or cutters against one another and the cut lengths of wire will be permitted to drop free just as soon as severed. The carrier 25 is mounted on rails 60 and is retained thereon by means of guides 61 as shown in Fig. 8 of the drawings.

It will be noted at this point that the cutter mechanism is operated intermittently to effect its function, including that of severing the wire, the latter moving continuously, and when the cutting mechanism is at rest. This intermittent operation is obtained by an intermittent operation of the shaft 17 that is effected by means of a clutch 37 of the one revolution type, that is, which automatically stops operation of the parts connected thereby upon a completion of one revolution. The clutch shown is also of the roller clutch type but as such clutch structure comprises no part of the present invention and as its construction and operation is readily understood by those skilled in the art a detailed illustration and description are omitted herein and the clutch is designated generally by the numeral 37. Its operation involves contact of a nose 39 with a fixed stop 38 and the brake 22—23 hereinbefore referred to is for the purpose of slowing operation at this time to avoid shock and disastrous results which would otherwise occur by the blow of the nose 39 against said stop.

Control of the clutch is effected by means of a target interposed in the path of movement of the end of the wire and connected with said stop 38 to operate the latter and remove it from beneath the nose 39 on the clutch, whereupon the latter immediately acts to start operation of the shaft 17, which operation will cease automatically upon completion of one revolution of the clutch as hereinbefore explained. The mechanism connecting the target and the clutch is constructed and operated as follows: A wire receiving frame is positioned ahead of the main frame to receive the cut lengths of wire hereinbefore referred to, this wire receiving frame, briefly described, comprising a base 40, supporting posts 41, and a table 42 upon the latter of which cut lengths of wire are received and from which they are automatically discharged in a manner well known in machines of this kind and for which reason a detailed illustration and description are omitted herein.

The target hereinbefore referred to comprises a block 43 slidably mounted on the table 42, or in a trough therein and is connected by a rod 44 with a trip slide 45 mounted for reciprocating movement in a guide groove 46 in an extension 47 comprising a part of the wire receiving frame, as shown in Fig. 4 of the drawings. The rod 44 extends through the slide 45 and is adjustably attached thereto as by means of a set screw as shown in said Fig. 4. A trip 48 projects from the upper side of the slide 45 for contact with a trip block 49 pivotally mounted on a swinging arm 50 suspended on a support 51 projecting from one of the posts 41. The block 49 is pressed downwardly as by means of a spring plunger in a box 52 secured to the arm 50, and a stop 53 projecting from said arm limits swinging movement of the block 49. There are two of the arms 50 and supports 51 at the upper ends of the posts 41 at opposite ends of the wire receiving frame and they are operatively connected by a wire 54. The arm 50 at the opposite end of the frame from that bearing the trip block 49 is connected by a rod 55 with a rocking lever arranged on the main frame and comprising lever arms 56—57 secured to opposite ends of a rock shaft 58 as shown in Figs. 3 and 5 of the drawings. The arm 57 is connected by a rod 59 with the stop 38 for the clutch hereinbefore referred to and operates to remove the stop to effect operation of the shaft 17 and parts connected therewith upon contact of the end of the wire 14 with the target 43 hereinbefore described.

During the operation of the parts just described the end of the wire striking the target 43 moves the latter and the trip slide 45, carrying the trip 48 against the end of the block 49, this effecting swinging movement of the arms 50 and a pull upon the rod 55 which operates through the connected mechanism to disengage the stop 38 from the nose of the clutch thereby effecting operation of the clutch to rotate the shaft 17 and operating the mechanism connected therewith including the cutter mechanism to sever the wire. As the trip 48 moves to the right from the position shown in Fig. 4, the block 49 being carried by the arm on the arc of a circle said block travels upwardly until it disengages from the trip 48 and the latter thereupon moves rearwardly independently of said block. Upon release the block 49 and the levers 50 return to their former positions and through the connecting wires and rods the stop 38 is positioned in the path of the nose 39 of the clutch to effect disengagement of the latter upon the completion of its revolution.

Resetting of the trip devices hereinbefore mentioned is effected by means of a resetting arm 62 projecting from a resetting slide 63 mounted in a slideway 64 in the extension 47, as shown in Fig. 4. The slide 63 has a roller engaged in a notch in a resetting block 65 fast to the top of a resetting lever 66 pivotally mounted at its lower end on the base 40 and pivotally connected at its upper end by a resetting rod 67 with an inter-

mediate lever pivotally mounted on the base 40 and comprising arms 69—70 secured at opposite ends of a rocker 71 pivotally mounted in a bracket 72 on the base 40, as shown in Figs. 4 and 5. The arm 70 is connected by a bar 73 with a crank pin on a gear 74 rotatably mounted on a standard 75 mounted on the base of the main frame and meshing with a gear 76 fast to the shaft 17, as shown in Fig. 5. From this it will be seen that the resetting mechanism is actuated intermittently by a like operation of the shaft 17. In order to regulate the movement of the arm 62 relative to that of the trip slide 45 a contact 77 is formed as a head on the end of a sleeve 78 threaded into the arm 62 whereby adjustment of the contact relative to the trip slide 45 may be had, a set screw as shown in Fig. 4 being employed to hold the stop in any position of adjustment and the rod 44 extending through the sleev to permit movement of said sleeve independently of said rod.

As an aid to a full understanding of these machines by those skilled in their use some parts are shown without specific reference thereto. As an instance, a cam 79 on the shaft 17 is connected with a shaft 80 which through a link connection 81 and connecting rod 82 operates to discharge the cut lengths of wire from the table 42. Other parts are similarly shown but a description is omitted herein as not necessary to an understanding of the invention.

While the target 43 is shown and described herein as a means directly acted upon by the wire for controlling the clutch mechanism, it will be obvious that the trip slide 45 may serve this purpose, and wherever the word "target" is used in the description or claims herein it is considered to refer to either of said members, the target 43 or the trip slide 45.

The gears 74 and 76 are of such relative sizes and the crank connection of the rod 73 is such as to impart gradually increasing and decreasing rates of movement to the arm 62, this movement being such as not to interfere with or restrict movement of the trip slide 45 but to effect movement to engage the slide at the proper time to effect resetting movement thereof.

I claim:

1. A wire working machine including a frame, means supported by said frame for feeding wire therealong, a cutter carrier mounted for reciprocating sliding movement on said frame, a set of cutters including a cutter slide mounted on said carrier, a driving shaft, a crank on said shaft, and a connection between said crank and cutter slide including two levers one of which is pivotally attached to said crank and to said cutter carrier for operation of the latter and the other of which is pivotally attached to the first mentioned lever and is connected with said cutter slide for operation of said slide.

2. A wire working machine including a frame, means supported by said frame for feeding wire therealong, a cutter carrier mounted for reciprocating sliding movement on said frame, a set of cutters including a cutter slide mounted on said carrier, a driving shaft, a crank on said shaft, and a connection between said crank and said cutter slide, said connection including two levers arranged in substantially parallel relation, one of said levers being pivotally attached to said crank at one end and to said carrier at its opposite end and the other lever being pivotally connected with the first mentioned lever and also with said cutter slide.

3. A wire working machine including a frame, means supported by said frame for feeding wire therealong, a cutter carrier mounted for reciprocating sliding movement on said frame, a set of cutters including a cutter slide mounted on said carrier, a driving shaft, a crank on said shaft, a carrier reciprocating lever pivotally attached to said carrier and also connected to said crank, a cutter lever pivotally supported by said carrier, a pivotal connection between said levers, and an operative connection between said cutter lever and said cutter slide for operation of the latter.

4. A wire working machine including a frame, means supported by said frame for feeding wire therealong, a cutter carrier mounted for reciprocating sliding movement on said frame, a set of cutters including a cutter slide mounted on said carrier, a driving shaft, a crank on said shaft, a carrier reciprocating lever supported by said carrier and pivotally attached at its end to said crank, a cutter lever pivotally supported by said carrier, a pivotal connection between said levers, and an operative connection between said cutter lever and said cutter slide for operation of the latter.

5. A wire working machine including a frame, means supported by said frame for feeding wire therealong, a cutter carrier mounted for reciprocating sliding movement on said frame, a set of cutters including a cutter slide mounted on said carrier, a driving shaft, a crank on said shaft, a carrier reciprocating lever supported at one end by said carrier and pivotally attached at its opposite end to said crank, a cutter lever pivotally supported by said carrier and pivotally connected with said carrier reciprocating lever, and an operative connection between said cutter lever and said cutter slide for operation of the latter.

6. A wire working machine including a frame, means supported by said frame for feeding wire therealong, a cutter carrier mounted for reciprocating sliding movement on said frame, a set of cutters including a cutter slide mounted on said carrier, a driving shaft, a crank on said shaft, a carrier reciprocating lever supported at one end by said carrier and connected at its opposite end with said crank, a cutter lever supported intermediate its ends by said carrier and pivotally connected at one end with said carrier reciprocating lever intermediate the ends of the latter, and a pivotal connection between the opposite end of said cutter lever and said cutter slide for operation of the latter.

7. A wire working machine including a frame, means supported by said frame for feeding wire therealong, a cutter carrier mounted for reciprocating sliding movement on said frame, a set of cutters including a cutter slide on said carrier, a driving shaft, a crank on said shaft, and a carrier reciprocating lever pivotally attached to said carrier and to said crank, a cutter lever pivotally attached to said carrier reciprocating lever and pivotally connected with said cutter slide, the crank being disposed to pass its substantially perpendicular center relatively to said lever at the time of cutting operations of said cutters.

8. A wire working machine including a frame, means supported on said frame for feeding wire therealong, a cutter carrier mounted for reciprocating sliding movement on said frame, a set of cutters including a cutter slide on said carrier, a driving shaft, a crank on said shaft, a

carrier reciprocating lever pivotally attached to said carrier and to said crank in a manner to apply force to said carrier in a substantially horizontal direction in one position of said crank, and a cutter lever pivotally connected with said carrier reciprocating lever and with said cutter slide, said crank being disposed to pass its substantially perpendicular center relatively to said lever and to apply said force in a substantially horizontal line at the time of cutting operations of said cutters.

9. A wire working machine including a frame, means supported on said frame for feeding wire therealong, cutter mechanism for cutting said wire, a table to receive severed lengths of wire, a target slidably supported on said table in the path of movement of said wire, a trip, means for transmitting force from said target to said trip for operation of the latter by said target, a trip block located in the path of said trip, a pivotally mounted swinging arm supporting said trip block to carry it out of the path of said trip and disengage the latter therefrom, a clutch for operating said wire cutter, and an operative connection between said clutch and said swinging arm for release of said clutch to start operation of said cutter mechanism.

10. A wire working machine including a frame, means supported on said frame for feeding wire therealong, cutter mechanism for cutting said wire, a table to receive severed lengths of wire, a target slidably supported by said table in the path of movement of said wire, a trip, means for transmitting force from said target to said trip for operation of the latter by said target, a pivotally mounted trip block located in the path of said trip, a pivotally mounted swinging arm to which said trip block is pivotally attached to carry it out of the path of said trip and disengage the latter therefrom, a clutch for operating said wire cutter, and an operative connection between said clutch and said swinging arm for release of said clutch to start operation of said cutter mechanism.

11. A wire working machine including a frame, means supported by said frame for feeding wire therealong, cutter mechanism for cutting said wire, a table to receive severed lengths of wire, a target slidably supported on said table in the path of movement of said wire, a trip, means for transmitting force from said target to said trip for operation of the latter by said target, a trip block located in the path of said trip, a pivotally mounted swinging arm supporting said trip block to carry it out of the path of said trip and disengage the latter therefrom, means for pressing said trip block into the path of movement of said trip, a clutch for operating said wire cutter, and an operative connection between said clutch and said swinging arm for release of said clutch to start operation of said cutter mechanism.

12. A wire working machine including a frame, means supported by said frame for feeding wire therealong, cutter mechanism for cutting said wire, a table to receive severed lengths of wire, a target slidably supported on said table in the path of movement of said wire, a trip, means for transmitting force from said target to said trip for operation of the latter by said target, a trip block, a pivotally mounted swinging arm supporting said trip block to carry it out of the path of said trip and disengage the latter therefrom, said trip block being pivotally mounted on said arm, a stop to limit swinging movement of said trip block against force applied by said trip to said block, a clutch for operating said wire cutter, and an operative connection between said clutch and said swinging arm for release of said clutch to start operation of said cutter mechanism.

13. A wire working machine including a frame, means supported by said frame for feeding wire therealong, cutter mechanism for cutting said wire, a table to receive severed lengths of wire, a target slidably supported by said table in the path of movement of said wire, a trip block operatively connected with said target for movement thereby, a trip projecting from said block, a swinging arm supported by said frame and to which said trip block is pivotally attached to be carried out of the path of said trip to disengage the latter therefrom, a clutch for operating said wire cutter, and an operative connection between said clutch and said swinging arm for release of said clutch by movement of said arm to start operation of said cutter mechanism.

14. A wire working machine including a frame, means supported on said frame for feeding wire therealong, cutter mechanism for cutting said wire, a table to receive severed lengths of wire, a target slidably supported by said table in the path of movement of said wire, a trip positioned for movement by said target, a swinging arm supported by said frame, a trip block pivotally mounted on said arm in the path of movement of said trip to be carried by said arm out of said path of said trip, a clutch for operating said wire cutter, an operative connection between said clutch and said swinging arm for release of said clutch to start operations of said cutter mechanism, and an operative connection between said trip and the mechanism for operating said clutch to return said trip for a repeated operation of said trip block.

15. A wire working machine including a frame, means supported by said frame for feeding wire therealong, cutter mechanism for cutting said wire, a table to receive the severed lengths of wire, a target slidably supported by said table in the path of said wire, a trip positioned for movement by said target, a swinging arm supported by said frame, a trip block pivotally mounted on said arm in the path of movement of said trip to be carried by said arm out of the path of said trip, a clutch to control operation of said wire cutter, an operative connection between said clutch and said swinging arm for release of the clutch to start operation of said cutter mechanism, a resetting arm movably mounted on the frame to operate said trip slide to return it to position for repeated operation by said trip, and an operative connection between said resetting arm and the mechanism for operating said clutch to effect said return movement of said resetting arm.

16. A wire working machine including a frame, means supported by said frame for feeding wire therealong, cutter mechanism for cutting said wire, a table to receive the severed lengths of wire, a target slidably supported by said table in the path of movement of said wire, a trip positioned for movement by said target, a swinging arm supported by said frame, a trip block pivotally mounted on said arm in the path of movement of said trip to be carried by said arm out of the path of said trip, a clutch to control operation of said wire cutter, an operative connection between said clutch and said swinging arm for release of said clutch to start operation

of said cutter mechanism, a resetting arm movably mounted on the frame to operate said trip slide to return it to position for repeated operation of said trip, and an operative connection between said resetting arm and the mechanism for operating said clutch to move said arm in one direction without interfering with movement of the trip slide and then to return said trip slide to position for repeated operation of said trip block.

17. A wire working machine including a frame, means supported by said frame for feeding wire therealong, cutter mechanism for cutting said wire, a table to receive the severed lengths of wire, a target slidably supported by said table in the path of movement of said wire, a trip positioned for movement by said target, a swinging arm supported by said frame, a trip block pivotally mounted on said arm in the path of movement of said trip to be carried by said arm out of the path of said trip, a clutch for controlling operation of said wire cutter, an operative connection between said clutch and said swinging arm for release of said clutch to start operation of said cutter mechanism, a resetting arm movably mounted on the frame to operate said trip slide, a contact adjustably mounted in said resetting arm to engage said trip slide to return it to position for repeated operation of said trip block, and an operative connection between said resetting arm and the mechanism for operating said clutch to effect said return movement of said resetting arm.

18. A wire working machine including a frame, means supported by said frame for feeding wire therealong, cutter mechanism supported by said frame for cutting said wire, a table to receive severed lengths of wire, a target slidably supported by said table in the path of movement of said wire, a trip slide movable in a guideway in said frame for movement by said target, a trip carried by said slide, a swinging arm supported by said frame, a trip block pivotally mounted on said arm in the path of movement of said trip to be carried by said arm out of the path of said trip, a clutch for operating said wire cutter, an operative connection between said clutch and said swinging arm for release of said clutch to start operation of said cutter mechanism, a resetting slide mounted for sliding movement in a guideway in said frame, a resetting arm extending from said slide into the path of said trip slide to operate the latter to return it to position for repeated operation of said trip, and an operative connection between said resetting slide and the mechanism for operating said clutch to effect said return movement of said resetting mechanism.

19. A wire working machine including a frame, means supported by said frame for feeding wire therealong, cutter mechanism supported by said frame for cutting said wire, a table to receive severed lengths of wire, a target slidably supported by said table in the path of movement of said wire, a trip slide movable in a guideway in said frame for movement by said target, a trip carried by said slide, a swinging arm supported by said frame, a trip block pivotally mounted on said arm in the path of movement of said trip to be carried by said arm out of the path of said trip, a clutch for operating said wire cutter, an operative connection between said clutch and said swinging arm for release of said clutch to start operation of said cutter mechanism, a resetting slide mounted for sliding movement in a guideway in said frame, a resetting arm extending from said slide into the path of said trip slide to operate the latter to return it to position for repeated operation of said trip, a lever pivotally mounted on said frame and having a seat in its upper end for a resetting block, a resetting block mounted on said seat, a trunnion projecting from said resetting slide into a notch in said resetting block, and an operative connection between said lever and the mechanism for operating said clutch to effect said return movement of said resetting arm.

20. A wire working machine including a frame, means supported by said frame for feeding wire therealong, a cutter carrier mounted for reciprocating sliding movement horizontally on said frame, a set of cutters including a cutter slide mounted on said carrier, a driving shaft, a crank on said shaft, and a connection between said crank and cutter slide including two levers one of which is pivotally attached to said crank and to said cutter carrier for operation of the latter and the other of which is pivotally attached to the first mentioned lever and is connected with said cutter slide whereby said carrier and slide are operated by a single member on said shaft and cutting movement only is imparted to said slide.

21. A wire working machine including a frame, means supported by said frame for feeding wire therealong, cutter mechanism for cutting said wire, a table to receive and support lengths of wire, a target slidably supported by said table in the path of said wire, a trip positioned for movement by said target, a clutch to control operation of said wire cutter, an operative connection between said clutch and said trip for release of the clutch to start operation of said cutter mechanism, said connection including means for release of said trip for extended movement thereof independently of said connection, a resetting arm movably mounted on the frame to operate said trip to return it to position for repeated operation thereof, and an operative connection between said resetting arm and the mechanism for operating said clutch to effect said return movement of said resetting arm.

22. A wire working machine including a frame, means supported by said frame for feeding wire therealong, a cutter mechanism for cutting said wire, a table to receive the severed lengths of wire, a target slidably supported by said table in the path of movement of said wire, a trip positioned for movement by said target, a clutch to control operation of said wire cutter, an operative connection between said clutch and said trip for release of the clutch to start operation of said cutter mechanism, said connection including means for release of said trip for extended movement thereof independently of said connection, a resetting arm movably mounted on the frame to operate said trip to return it to position for repeated operation, and an operative connection between said resetting arm and said mechanism for operating said clutch to move said arm in one direction without interfering with the movement of the trip and then to return said trip to position for repeated operation thereof.

23. A wire working machine including a frame, means supported by said frame for feeding wire therealong, a cutter mechanism for cutting said wire, a table to receive the severed lengths of wire, a target slidably supported by said table

in the path of movement of said wire, a trip positioned for movement by said target, a clutch for controlling operation of said wire cutter, an operative connection between said clutch and said trip for release of said clutch to start operation of said cutter mechanism, said connection including means for release of said trip for extended movement thereof independently of said connection, a resetting arm movably mounted on the frame to operate said trip, a contact adjustably mounted on said resetting arm to engage said trip to return it to position for repeated operation thereof, and an operative connection between said trip and the mechanism for operating said clutch to effect said return movement of said trip.

24. A wire working machine including a frame, means supported by said frame for feeding wire therealong, cutter mechanism supported by said frame for cutting said wire, a table to receive severed lengths of wire, a target slidably supported by said table in the path of movement of said wire, a trip slide bearing a trip and movable in a guideway in said frame for movement by said target, a clutch for operating said wire cutter, an operative connection between said clutch and said trip slide for release of said clutch to start operation of said cutter mechanism, said connection including means for release of said trip for extended movement thereof independently of said connection, a resetting slide mounted for sliding movement in a guideway in said frame, a resetting arm extending from said slide into the path of said trip to operate the latter to return it to position for repeated operation of said trip, and an operative connection between said resetting slide and the mechanism for operating said clutch to effect said return movement of said resetting mechanism.

25. A wire working machine including a frame, means supported by said frame for feeding wire therealong, cutter mechanism supported by said frame for cutting said wire, a table to receive severed lengths of wire, a target slidably supported by said table in the path of movement of said wire, a trip slide bearing a trip and movable in a guideway in said frame for movement by said target, a clutch for operating said wire cutter, an operative connection between said clutch and said trip slide for release of said clutch to start operation of said cutter mechanism, said connection including means for release of said trip for extended movement thereof independently of said connection, a resetting slide mounted for sliding movement in a guideway in said frame, a resetting arm extending from said slide into the path of movement of said trip slide to operate the latter to return it to position for repeated operation of said trip, a lever pivotally mounted on said frame and having a seat in its upper end for a resetting block, a resetting block mounted on said seat, a trunnion projecting from said resetting slide into a notch on said resetting block, and an operative connection between said lever and the mechanism for operating said clutch to effect said return movement of said resetting arm.

SYDNEY GRIMSHAW.