C. A. PORATH.

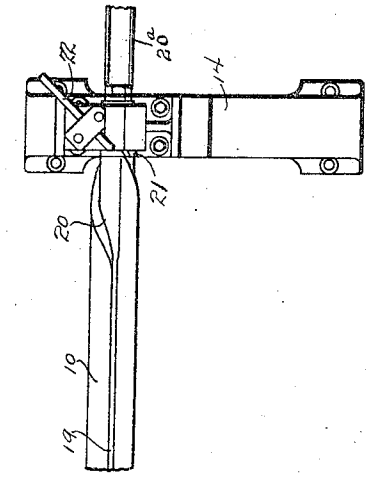
WIRE CUTTING MACHINE.

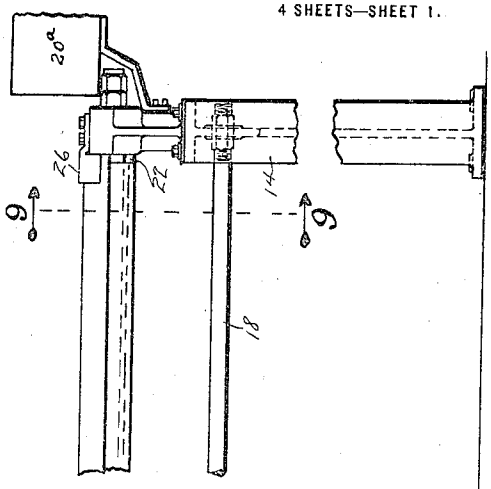
APPLICATION FILED JUNE 4, 1917.

1,289,259.

Patented Dec. 31, 1918.

4 SHEETS—SHEET 1.





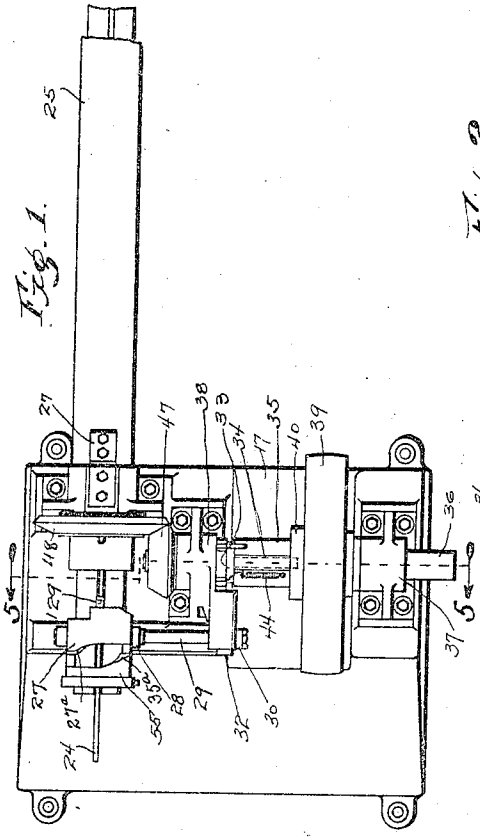


Fig. 1.

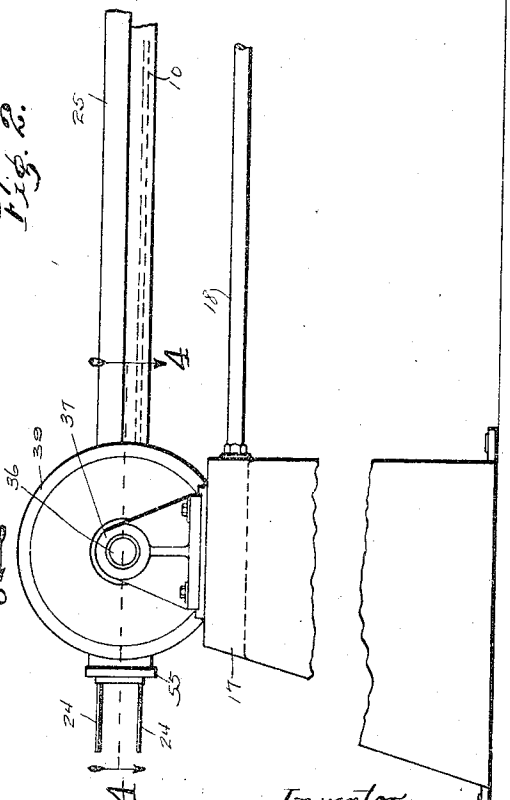


Fig. 2.

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4 SHEETS—SHEET 2.

Fig. 3.

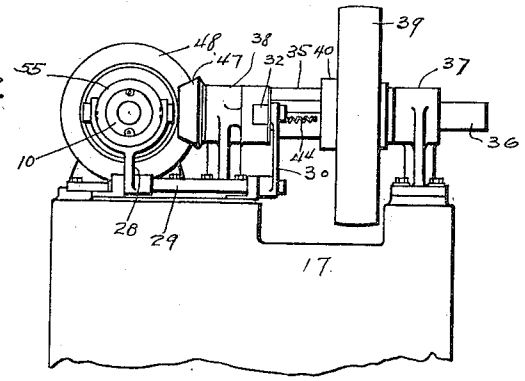
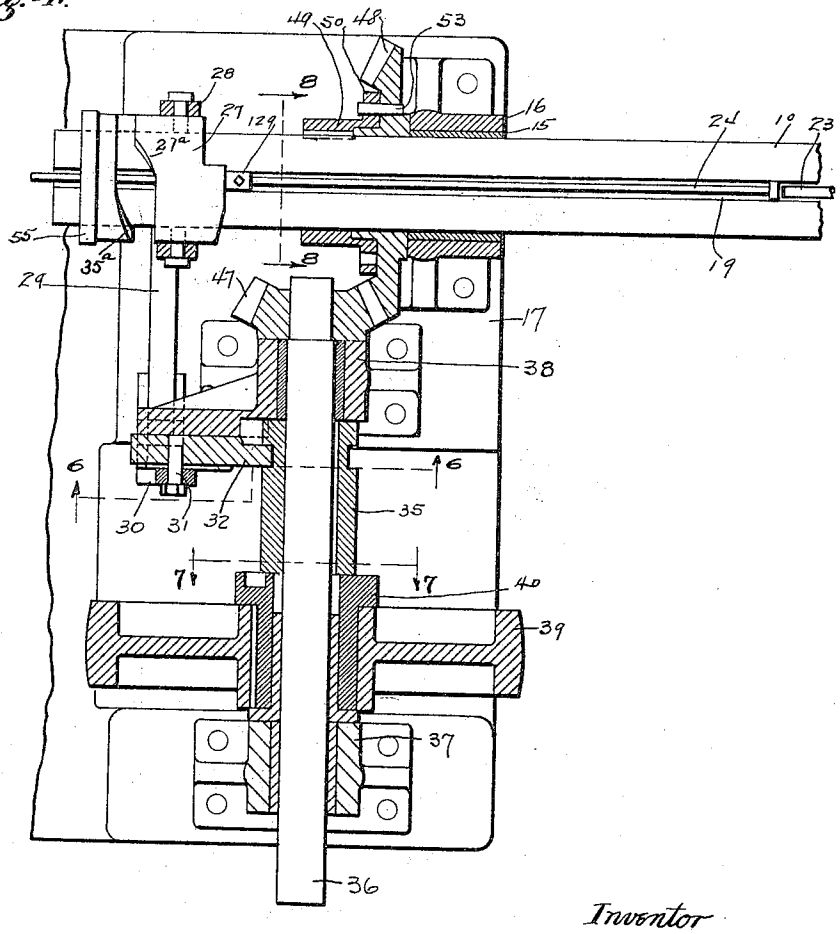



Fig. 4.




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4 SHEETS—SHEET 3.

Fig. 5.

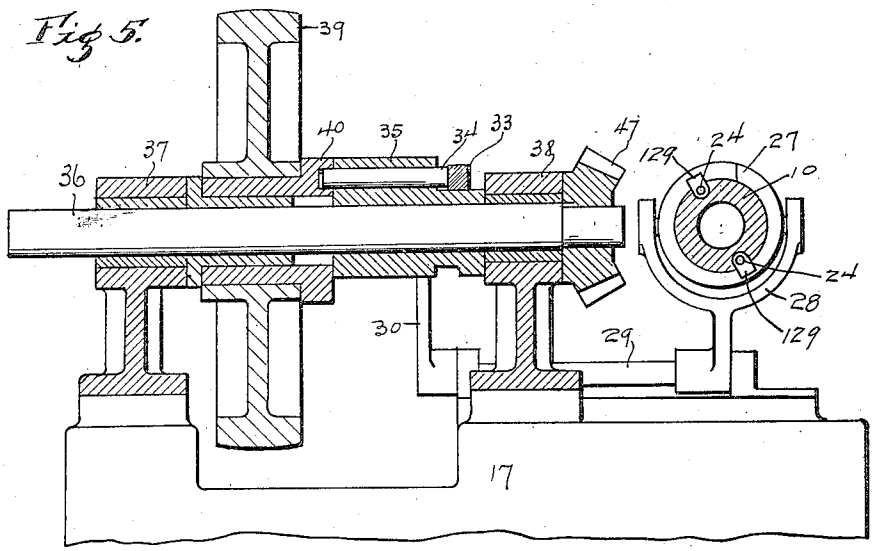



Fig. 6.

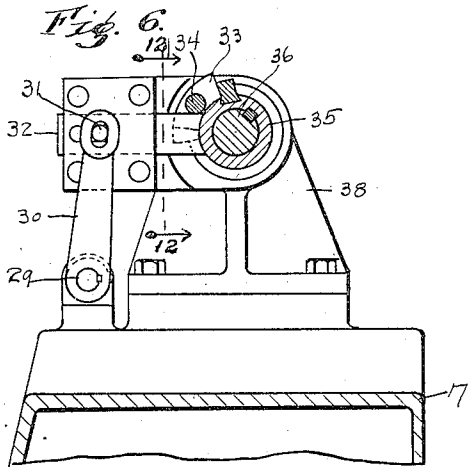



Fig. 7.

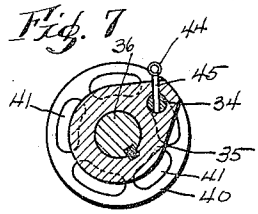



Fig. 8.

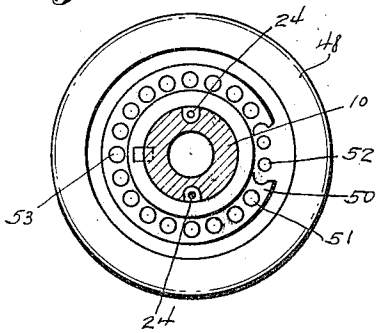
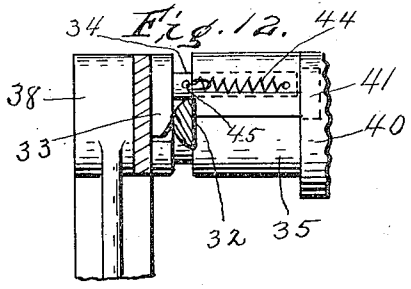



Fig. 12.




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4 SHEETS—SHEET 4.

Fig. 9

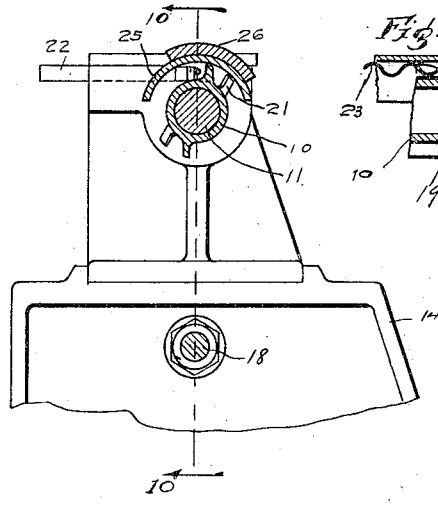



Fig. 10.

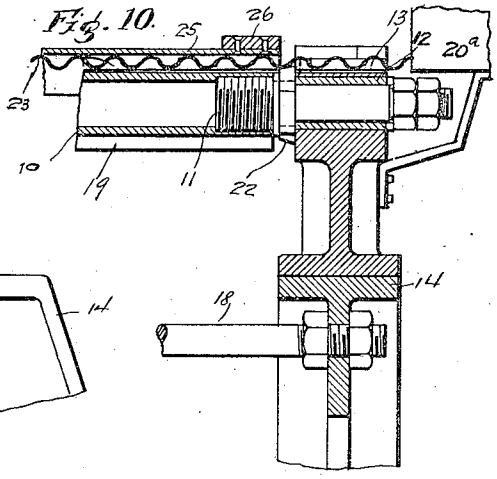



Fig 11.

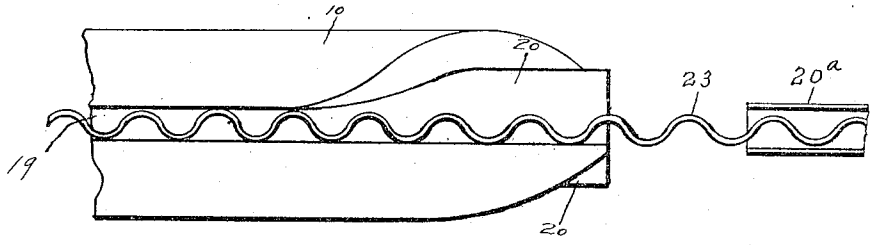
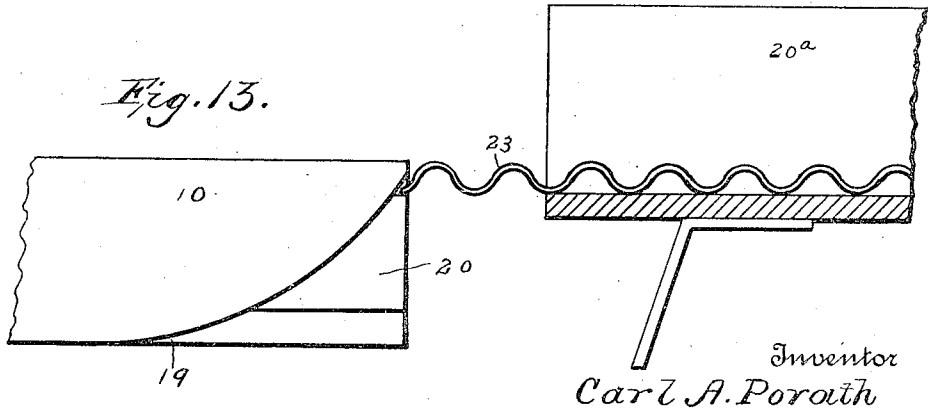



Fig. 13.




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# UNITED STATES PATENT OFFICE.

CARL A. PORATH, OF KOKOMO, INDIANA.

## WIRE-CUTTING MACHINE.

1,289,259. Specification of Letters Patent. Patented Dec. 31, 1918.

Application filed June 4, 1917. Serial No. 172,666.

*To all whom it may concern:*

Be it known that I, CARL A. PORATH, a citizen of the United States, and a resident of Kokomo, county of Howard, and State of Indiana, have invented a certain new and useful Wire-Cutting Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like numerals refer to like parts.

This invention relates to a wire cutting machine adapted to rapidly cut wire into given lengths while being continuously fed into the machine.

Heretofore it has been necessary to arrange the wire feeding mechanism so that the feeding will be interrupted while the cutting process is in operation, which not only necessitates the use of complicated mechanism but prevents the rapid action of the machine thereby causing a loss of time in its operation.

The main object of this invention is to provide a cutting machine which will permit the continual feeding of the wires therein without interruption, cut the wire in given lengths and discharge it for convenient handling. This is accomplished by means of an intermittently rotated cylinder having a plurality of wire receiving grooves in its face into which the wires are successively fed and cut.

Another feature of the invention is the means for actuating the wire carrying cylinder so that it will be intermittently rotated a partial revolution when actuated by the wire being fed into one of the grooves of the cylinder so that it will be cut into lengths and discharged therefrom.

Still another feature of the invention is the adjusting means for taking up any play in the gears due to the wear of the teeth or in further accurately adjusting the wire carrying cylinder so that the grooves therein will be in proper position for causing the mechanism to be operated which means will be hereinafter more fully shown and described.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

Figure 1 is a plan view of the machine with the central portion broken away. Fig. 2 is a side elevation of the machine with portions thereof broken away. Fig. 3 is an end view of the machine with the lower portion of the base broken away. Fig. 4 is a cross section taken on the line 4—4 of Fig. 2. Fig. 5 is a cross section taken on the line 5—5 of Fig. 1. Fig. 6 is a cross section taken on the line 6—6 of Fig. 4. Fig. 7 is a section taken on the line 7—7 of Fig. 4. Fig. 8 is a section taken on the line 8—8 of Fig. 4. Fig. 9 is a section taken on the line 9—9 of Fig. 2. Fig. 10 is a section taken on the line 10—10 of Fig. 9. Fig. 11 is an enlarged plan view of one end of the wire carrying cylinder looking downwardly. Fig. 12 is a section taken on the line 12—12 of Fig. 6. Fig. 13 is a side elevation partly in section of the feeding end of the wire carrying cylinder and feed trough attached thereto.

In the drawings there is shown a machine having a wire carrying cylinder 10 supported at one end by the stud 11, see Fig. 10, which extends through and is revoluble in a sleeve 12 and bearing 13, supported on the base 14. The other end of said cylinder is supported in a sleeve 15 and bearing 16 mounted on the base 17, see Fig. 4. The bases 14 and 17 are rigidly secured together by a connecting rod 18. The cylinder 10 is provided with longitudinal grooves 19 through which the wire is adapted to extend. At the feeding end of the cylinder the grooves 19 open into outwardly tapering channels 20 which are best shown in the enlarged view of said cylinder as shown in Fig. 11. Rigidly mounted on the stud 11 so as to revolve with said cylinder there is a pair of oppositely extending cutters 21, see Fig. 9, adapted to revolve past a stationary cutter 22 mounted on the top of said bearing, whereby the wire will be cut as said cutters pass each other. Both cutters are made so as to fit in the coils, thereby making a clean cut and not changing the shape of the wire. The wire 23 is fed into the machine as shown in Fig. 10 so as to pass between the cutters 21 and 22 and extend into one of the channels 20 and into the groove 19 corresponding with the channel at the end of the cylinder and passing therethrough until it engages the stop rod 24, see Fig. 4, which sets the rotating mechanism in operation to give a partial revolution to the cylinder as will be hereinafter described, thereby causing the cutter 21 to pass the cutter 22 at a high rate of speed; and cutting off

the length of wire extending therefrom to said stop rod. As soon as said knives have passed each other, which is substantially instantaneous, the wire which is being continually fed therein will begin to enter the following channel 20 in said cylinder while it is moving. As it is necessary that the wire be detained for an instant while the cutters are passing each other and as the feeding is continuous the wire will bow upwardly in the feeding trough 20ª extending from the coiling machine (not shown) until the cutter 21 has passed out of the path of the wire, when, in view of the springy nature of the wire, it will immediately straighten out and enter the channel 20 of the next succeeding groove 19, and in view of the taper of one wall of the channel 20 the wire will move through the channel and enter the groove without contacting the wall of the channel. It will, therefore, be seen from the foregoing that a continuous feeding of the wire is permitted due to the outwardly tapering channels and the springy nature of the wire, and the means which will be hereinafter described for causing a partial rotation of the wire carrying cylinder and the cutter. For preventing the wire from escaping the upper channel and recess there is provided a guard 25, semi-circular in cross section which covers the upper side of said cylinder and is supported at its ends by the brackets 26 and 127.

The following mechanism drives the wire carrying cylinder in its intermittent semi-revolution:

Loosely mounted on the cylinder 10 there is a cam shaped collar 27 which is pivoted on the yoke 28, and is adapted to be moved longitudinally of said cylinder by the stop rod 24 which has a block adjustably secured thereto by the set screw 129. By adjusting the block upon the stop rod 24 relatively to said collar any desired length of wire may be cut. When the wire 23 engages the stop rod 24 the block thereon is forced against and moves the collar 27 and the yoke 28 so as to turn the shaft 29 and impart a rocking movement to the arm 30 which is keyed to said shaft as shown in Fig. 6. The other end of the arm 30 engages a pin 31 on the plunger 32 so as to move said plunger in and out of the way of the block 33 and pin 34. The block 33 is rigidly secured to the pin 34 which extends through the sleeve 35. A shaft 36 is mounted in bearings 37 and 38 which are supported on the base 17. Loosely mounted on said shaft is a fly wheel 39 which is provided with a disk clutch 40 having a plurality of circumferential holes or openings 41, as shown in Fig. 7. The disk clutch 40 is in such a position that the holes 41 may register with the pin 34 as shown in Fig. 5, so that when the pin is engaged with one of the holes 41 the rotating fly wheel will cause the shaft 36 to rotate. The pin 34 is thrown into engagement with the clutch member 40 by the movement of the arm 30, which upon moving the plunger 32 from engagement with the block 33 permits the pin 34 to be drawn forward by the spring 44 which is secured at one end to the sleeve 35 and at the other end to a dowel pin 45 secured in the pin 34, said dowel pin entering a slot provided for that purpose in the sleeve 35. The pin 34 is thrown out of engagement with the clutch member when the arm 30 causes the plunger 32 to return to the position shown in Fig. 6 so that its curved side will engage the beveled end of the block 33, as shown in Fig. 12, which would force said block rearwardly and draw the pin from the clutch member 40 and at the same time engage said pin as shown in Fig. 6 and prevent the further revolving movement of the sleeve 35 and shaft 36.

Mounted on the inner end of the shaft 36 and keyed thereon is a beveled pinion 47 in position to mesh with the beveled gear 48 which is loosely mounted on the cylinder 10. The gear 48 is locked to the cylinder 10 through a hub member 49 which is keyed thereto, which hub has a flange 50 provided with a plurality of holes 51 as shown in Fig. 8. The gear 48 is provided with a plurality of holes 52 and has a greater number of holes than the number of holes in the flange 50. The hub 40 and the gear 48 are then locked together by inserting a dowel pin 53 through the registering holes 51 and 52, by means of which any adjustment may be obtained between the cylinder 10 and the gears 47 and 48. A cam 55 is secured to the cylinder 10, said cam having faces 35ª thereon, which are so positioned that one of them will engage the cammed face 27ª of the collar 27, as soon as the sleeve 35 and pin 34 have rotated a sufficient distance to move out of the path of the plunger 32, thus moving the collar 27 and parts controlled thereby, inwardly and again positioning the plunger 32 in the path of the block 33 and pin 34. As soon as the sleeve 35 has made a complete revolution the beveled face of the block 33 will engage the rounded face of the plunger 32, said plunger withdrawing the pin 34 and stopping the rotation of the cylinder 10.

The operation of the machine is as follows:

The wire 23 is fed along the slot 19 until it engages the stop rod 24, which moves the collar 27 forward causing the shaft 29 to turn whereby the plunger 32 will be drawn from in front of the block 33 which will permit the spring 44 to draw the pin 34 into one of the holes 41 in the clutch 40 which is keyed to the continually moving fly wheel 39. This will then lock said fly wheel with the sleeve 35 which is keyed on the shaft 36

and rotate the pinion 47, and if the cylinder is provided with but two grooves 19, as shown, the ratio of the gears 47 and 48 will be such that the gear 47 will make one complete revolution while the gear 48 is making but a half revolution, but if a greater number of grooves are provided, the ratio between the two gears will be proportioned accordingly. As the gear 48 is locked to the clutch 49 keyed on the cylinder 10, the cylinder 10 will be given a partial revolution with each revolution of the gear 47, in this instance a half revolution, thereby causing the cutters 21 and 22 to engage each other and cut off the wire which will pass on around with the cylinder and drop from the groove 19. The instant the wire is cut the following length of wire will be fed into the next succeeding channel 20 and subsequently through the groove 19 to engage the stop rod in said groove and perform another operation of the machine. When the cylinder has started on its partial revolution the cam 55 will engage the collar 27 and force it back into its original position which will cause the arm 30 to move the plunger 32 into the position shown in Fig. 6 so that the block 33 must engage it and force it rearwardly, thereby drawing the pin 34 from the hole 41 in the clutch 40 and releasing the fly wheel, said pin at the same time engaging the plunger 32 and preventing the further movement of the shaft 36, gears, and cylinder 10, which parts must then come to a sudden stop.

In order to adjust the cylinder 10 to its proper position the pin 53 may be removed so that the cylinder is free to be turned to any position and then locked with the gear 48 by reinserting the pin 53, and if the gear teeth should wear so that the proper position could not be obtained in this manner the corresponding holes 51 and 52 through which the pin 53 extends may be adjusted so as to compensate therefor.

The invention claimed is:

1. A machine for cutting wire including a cutting mechanism, means for operating said cutting mechanism, a cylinder having channels for receiving said wire and a trough open at its upper edge for conveying said wire through the cutting mechanism and into said channels.

2. In a machine for cutting wire and the like including a cylinder, cutters adapted to be operated by said cylinders for cutting said wire, said cylinders being provided with tapering channels for receiving said wire and permitting it to be continuously fed therein, and a stationary non-rotatable trough for conveying said wire to said cylinder, the walls thereof being of a height to permit said wire to bow upwardly without leaving the trough.

3. In a machine for cutting wire and the like including a cylinder having tapering channels therein, a revolving cutter carried and operated by said cylinder, an adjustable stationary cutter for coöperation therewith, means for intermittently rotating said cylinder a partial revolution thereof for receiving, cutting and discharging said wire, and a channel shaped trough for guiding said wire to said cylinder of a height to permit upward bowing of said wire without leaving the trough.

4. In a machine for cutting wire and the like including a cylinder having recesses therein, into which said wire may be continuously fed, said recess extending the full length of said cylinder, one side wall of each recess at one end being disposed spirally of the cylinder whereby the wire may feed into the grooves while the cylinder is rotating, means operated by said wire for causing said cylinder to be rotated intermittently through a partial revolution thereof, cutters mounted on said cylinder, and a stationary cutting knife adaptably mounted in position to be engaged by said cutters when operated by the movement of said cylinder for cutting the wire fed therein.

5. In a machine for cutting wire and the like including a cylinder for receiving said wire, means operated by said cylinder for cutting the wire fed therein, a continuously revolving driving shaft at right angles to said cylinder, a driving pulley fixed thereon, a stop rod adapted to be engaged by the wire fed into said cylinder, a clutch disk of said pulley with a plurality of elongated concentrically arranged holes therein, a sleeve keyed on said shaft, a pin slidably mounted in said sleeve adapted to engage one of the holes in said clutch face, means operated by said stop rod for releasing said pin and permitting the same to engage said clutch face, and means on said cylinder for causing said pin to disengage said clutch face after said cylinder has passed through a partial revolution thereof, whereby said wire will be cut and discharged.

6. In a machine for cutting wire and the like, the combination with a grooved cylinder for receiving sections of wire, and stop rods adapted to be operated by the wire entering said grooves, of a driving shaft, a driving pulley rotatably mounted thereon, said driving pulley having a plurality of concentric holes in the hub thereof, a sleeve fixed to said driving shaft, a pin slidably mounted in said sleeve, one end of which is adapted to enter said holes to lock the driving pulley with the shaft, a block at the opposite end of said pin having one of its ends tapered, a semicircular sliding plunger adapted to engage the tapered end of said block and disengage the pin from the holes, said plunger normally resting in the path of the pin, an arm connected with said plunger,

a shaft to which said arm is connected, a yoke on said shaft, and a collar slidable on said cylinder and pivoted to said yoke operated by the action of the stop rod for rocking said yoke and arm for moving said plunger out of engagement with said pin and block.

7. In a machine for cutting wire and the like, the combination with a cylinder having longitudinally extending grooves therein, and cutting means at one end of said cylinder, of a non-rotatable trough for guiding the wire to said cylinder, said trough being channel shaped in cross section and open at its top, and having side walls of sufficient height to permit the wire to bow upwardly during the cutting operation, and prevent the wire from leaving the trough.

In witness whereof, I have hereunto affixed my signature.

CARL A. PORATH.

**Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents Washington, D. C."**