

Sept. 16 , 1924.

1,509,044

P. W. KUCHMUK
WIRE STRIPPING MACHINE

Filed Dec. 7, 1923

3 Sheets-Sheet 1

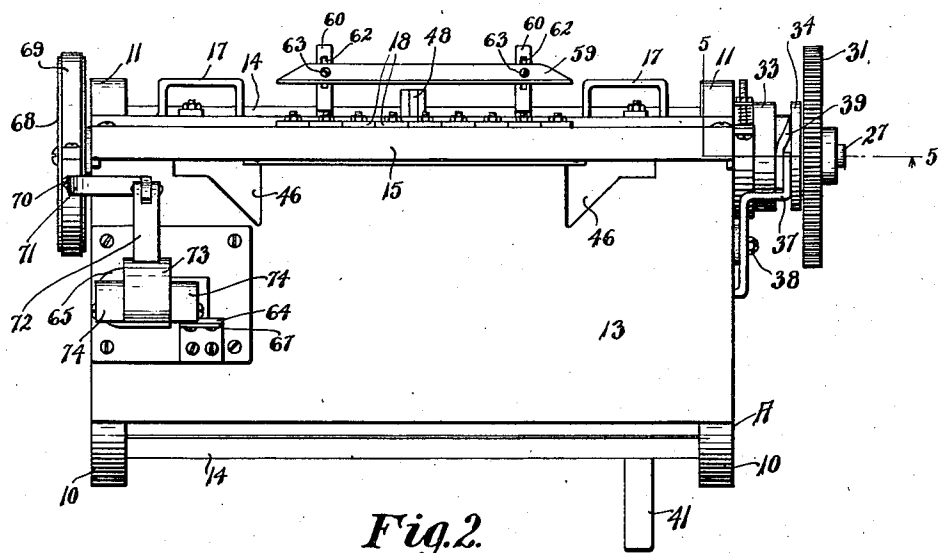
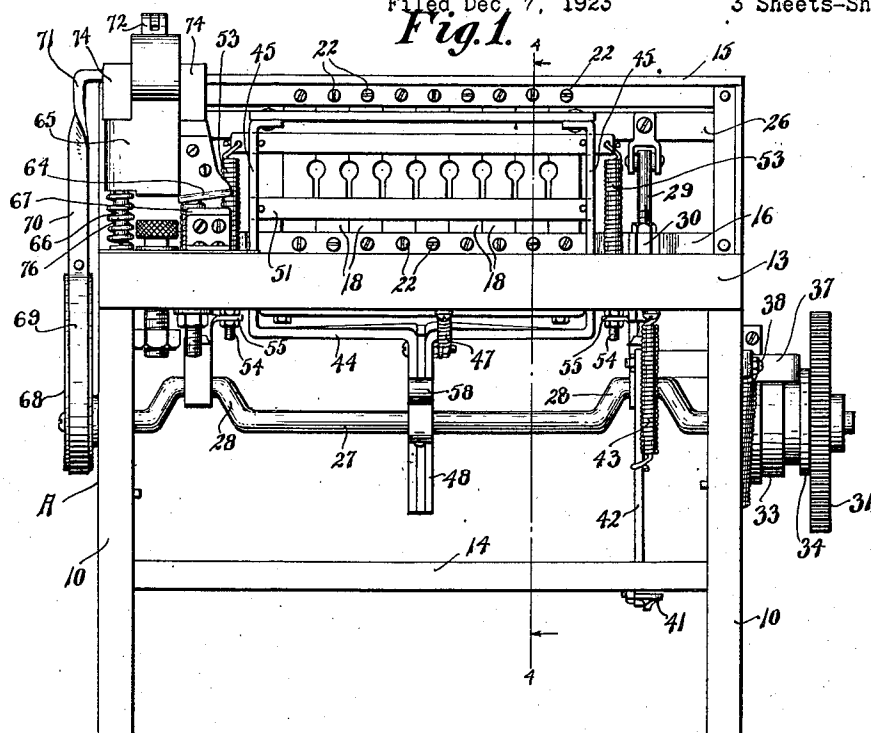


Fig. 2.

P. W. Kuchmuk.

INVENTOR

BY *Victor J. Evans.*

ATTORNEY

H. Cullison
H. Cullison

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Fig. 3.

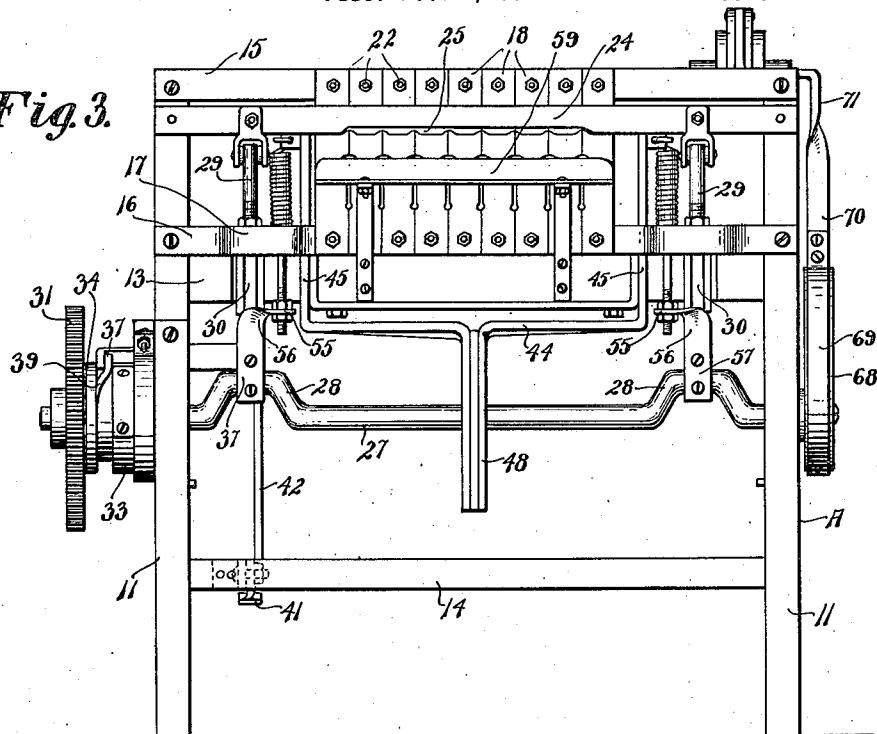


Fig. 4.

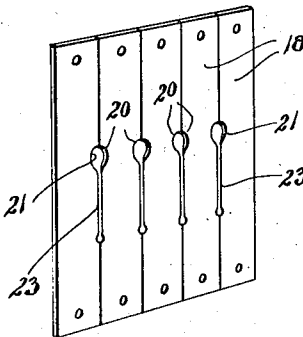
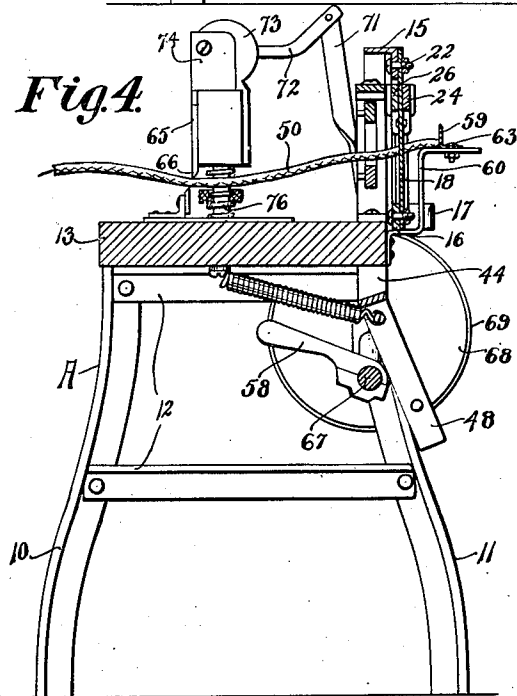


Fig. 7.

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3 Sheets-Sheet 3

Fig. 5.

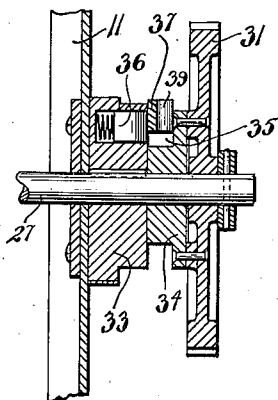


Fig. 6.

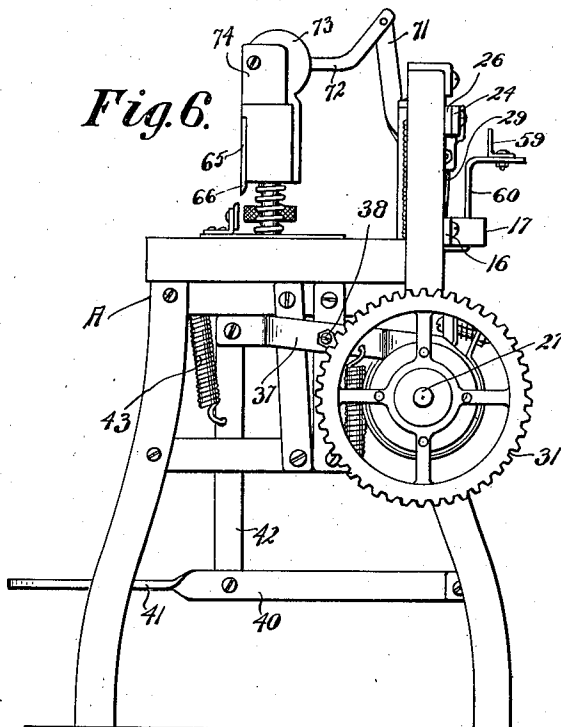


Fig. 8.

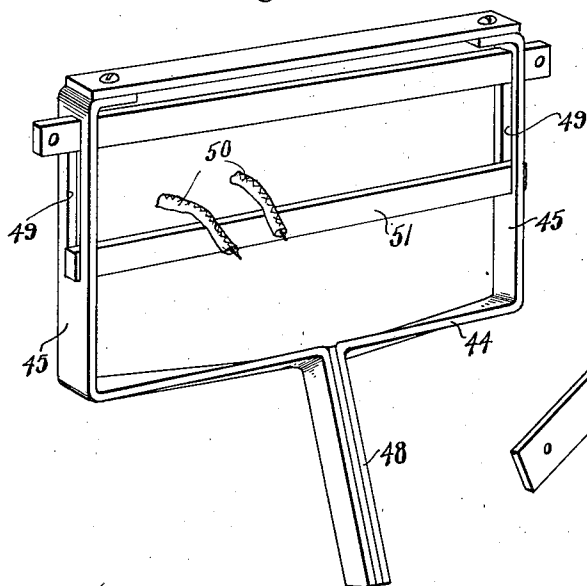
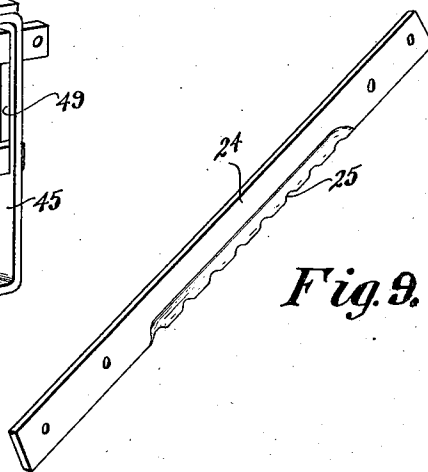


Fig. 9.



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UNITED STATES PATENT OFFICE.

PETER W. KUCHMUK, OF CHICAGO, ILLINOIS.

WIRE-STRIPPING MACHINE.

Application filed December 7, 1923. Serial No. 679,202.

To all whom it may concern:

Be it known that I, PETER W. KUCHMUK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Wire-Stripping Machines, of which the following is a specification.

This invention relates to machines for stripping the ends of electric wires, and 10 contemplates a structure by means of which more work can be accomplished in a given time than with other analogous machines with which I am familiar.

In carrying out the invention, I provide 15 a plurality of parallel stationary blades between which the wires are adapted to be positioned, and a relatively movable blade arranged transversely of the stationary blades to cooperate with the latter for the 20 purpose of stripping the ends of wires as said wires are automatically drawn from between the blades.

One of the chief characteristics of the present invention resides in the fact that 25 the movable blade operating means automatically controls the means for drawing the wires from between the blades, so that this latter operation is properly timed with relation to the final position of the movable 30 blade.

A further object of the invention consists in the use of an adjustable gauge by means of which any particular length of the wire can be stripped.

35 A still further object of the invention resides in the provision of an automatically operated cutter designed to shear and split the wire as the occasion may require.

Other objects and advantages of the invention will appear when the following detailed description is read in connection with the accompanying drawings, the invention 40 residing in the combination, construction and arrangement of parts as claimed.

45 In the drawings forming part of this application, like numerals of reference indicate similar parts in the several views, and wherein:

Figure 1 is a front elevation of the machine forming the subject matter of the present invention.

Figure 2 is a top plan view.

Figure 3 is a rear elevation.

Figure 4 is a sectional view taken on the line 4—4 of Figure 1.

Figure 5 is a sectional view taken on the line 5—5 of Figure 2.

Figure 6 is an end elevation.

Figure 7 is a view of several of the stationary blades.

Figure 8 is a view of the wire drawing device.

Figure 9 is a detail view of the movable blade.

Referring to the drawings in detail, A 65 indicates generally a supporting structure for the machine, this structure consisting of spaced end members including front and rear legs 10 and 11 respectively which are connected by transversely disposed members 12. The upper transverse members of the supporting structure support a table top 13, while the corresponding legs of the different end members are connected by 70 brace elements 14. It will be noted that the rear legs 11 project an appreciable distance above the table top 13, and connected at their upper ends by an angle iron strip 15 which of course provides for rigidity of the structure. These legs 11 are also connected together by a metallic strip 16 80 arranged beneath and in parallelism with the angle iron strip 15 inasmuch as these strips are utilized to support the stationary stripping blade to be presently described. It 85 will be noted that the strip 16 adjacent its opposite ends is formed with substantially U-shaped portions 17 to allow for proper movement of certain of the operating parts of the machine. The stationary blades just 90 referred to are indicated at 18, and are vertically disposed in edge to edge relation, and are supported by the strips 15 and 16 respectively. It will be noted that the opposite longitudinal edges of each blade are cut away as at 20 except for the two outermost blades, these blades only having their inner edges cut away as at 21. When the blades are arranged in the manner clearly 95 illustrated in the drawings, the cut away portions of the adjacent blades define wire receiving openings, and that portion of the wire to be stripped is adapted to be passed through one of these openings. It might here be stated that by adjusting the blades 100 laterally toward and away from each other,

the diameter of any opening can be varied to accommodate different size wire, this adjustment of the blades being permissible by reason of the fact that they are detachably connected with the strips 15 and 16 by fastening elements 22. Manifestly, these fastening elements can be removed and positioned in any one of a plurality of openings provided in the strips 15 and 16 for the reception of such elements, and the blades consequently spaced apart the required distance. It will be noted that the cut away portions of each blade are bevelled to provide cutting edges indicated at 23, these blades cooperating with a relatively movable blade for the purpose of stripping the insulation off the wires in a manner to be hereinafter described. The movable blade is indicated at 24, and is arranged transversely of the stationary blades to move toward and away from the wire receiving openings above mentioned. This blade 24 has its lower edge bevelled and notched as at 25, there being one of the notches in this blade for each wire receiving opening which the blade is adapted to traverse. The edges of these notches are sharpened to provide cutting edges which as above stated assist the cutting edges 23 of the stationary blades to remove the insulation from the ends of the wires, the movable blade 24 is carried by a flat bar 26 arranged in parallelism with the blade, being adapted to move on the opposite side of the stationary blades from that across which the movable blade is arranged to travel. After the wires to be stripped have been passed through the openings defined by the blades 19, the movable blade 24 travels downwardly until it impinges against the wires, forcing the same in effective engagement with the cutting edges 23 of the stationary blades, and in a sense clamping these wires so that when the latter are withdrawn from between the blades, the insulation is stripped from the ends thereof.

Any suitable means may be employed to control the movements of the blade 24, but I preferably make use of a shaft 27 which is journaled on the rear legs 11 of the supporting structure. This shaft adjacent its opposite ends is formed with crank portions 28 with each of which is associated a connecting rod 29. These rods of course support the movable blade 25 and impart movement thereto incident to the rotation of the shaft 27. If desired, each of the connecting rods may include a turn buckle 30 whereby the length of said rods can be varied and thus regulate the degree of movement of the movable blade 24, the shaft 27 can be rotated by a small motor (not shown), and the motor can be associated with the shaft by a belt and pulley, or can be geared thereto. As shown in this in-

stance, a gear 31 is carried by one end of the shaft for this purpose. The rotation of the shaft 27 can be controlled by a clutch mechanism carried by the same end of the shaft and which clutch includes a stationary collar 33 fixed to said shaft, and a relatively movable collar 34 fixed to the gear wheel 32. The movable collar 34 is notched as at 35 to receive a spring actuated clutch element 36 carried by the stationary collar 33 and projecting from one side thereof. As the gear wheel 33 and its collar 34 rotates, the clutch element 36 is projected into the notch 35, and thereby provides a connection between the gear wheel 31 and the shaft 27 to rotate the latter. The machine of course can be operated intermittently in view of which fact the gear 32 together with its collar 34 is allowed to idle on the shaft 27, and for this purpose I employ a lever 37 to normally hold the clutch element 36 retracted. The lever 37 is pivoted at a point between its ends as at 38, and the opposite ends of this lever are extended in opposite directions, one end 39 lying in the space between the fixed collar 33 and the movable collar 34 of the clutch occupying a position to hold the spring pressed clutch element 36 in a retracted position. This lever 38 can however be conveniently actuated to release the clutch element 36 when it is desired to put the machine into operation.

The lever 38 has its opposite ends connected with the shank 40 of a foot pedal 41 through the instrumentality of a vertically arranged connecting element 42. The shank of this pedal is pivoted at one end to one of the brace elements 14 of the supporting structure, while the pedal projects in advance of the machine and where it can be conveniently operated. A coil spring 43 has one end connected to the underside of the table top 13, and its lower end associated with the connecting element 42, to hold the foot pedal normally elevated and the lever 38 in an active position for the purpose above stated. Consequently, when the foot pedal is depressed, the lever 38 is rocked upon its pivot to release the clutch element 36, whereby the shaft 27 is rotated.

As above stated, I provide means for automatically withdrawing the wires from between the stripping blades after the movable blade 24 has reached its final position. This means includes a yoke 44, the parallel sides 45 operating in slots 46 provided in the table top 13 to allow proper movement of the yoke. These sides 45 of the yoke are pivoted on the table top whereby the yoke is mounted for rocking movement. The yoke is susceptible of movement toward and away from the stationary blades 19, being normally held substantially parallel with said blade by means of coil springs 47 terminally secured to the handle 48 of the yoke and to

the underside of the table top 13. It will be noted that the parallel sides 45 of this yoke are slotted as at 49, these slots receiving clamping bars, between which the wires 50 are adapted to be clamped prior to the movement of the yoke for the purpose of withdrawing the wires from between the stripping blades. One of these clamping bars is stationary, and indicated at 51, while the other of said clamping bars is mounted for sliding movement within the slot 49, to permit the wires to be conveniently positioned between the bars upon movement of the yoke in one direction, and to effectively clamp the wires between the bars upon movement of the yoke in an opposite direction. For this purpose, the movable clamping bar 52 is terminally connected with the corresponding upper extremities of the coil springs 53, the lower ends of these springs being connected with threaded rods 54 which in turn are connected with opposite extremities 55 of arms 56 carried by the bars 57 of the connecting rods 29. By reason of this construction, it will be noted that as the shaft 27 is being rotated, and the crank portions 28 move downwardly, the springs 53 are tensioned to pull the movable clamping bar 52 in the direction of the stationary bar 51, thereby effectively clamping the wires 50 between these bars, which occurs just prior to the swinging of the yoke 44 outwardly or away from the stationary blades. At the same time, the movable bar 42 is assuming its clamping relation with respect to the bar 51, the movable cutting blade 25 is being moved downwardly to impinge against the wires 50, and when the blade reaches its final position, the yoke 44 is moved outwardly away from the blades 19 to draw the wires from between the blades, and thus strip said wires of the insulation thereon. The timing of the yoke in this manner is accomplished by the use of a cam arm 58 carried by the shaft 27, and brought into contact with the handle 48 of the yoke once during each revolution of the shaft 27. Consequently, the yoke remains in its normal position parallel with the blades 19, while the clamping bar 52 is being moved into its clamping relation with the bar 51 and the cutting blade 24 to its final position, at which time the cam arm 58 initially contacts the handle 48 of the yoke. Now, upon continued rotation of the shaft 27, the yoke is swung outwardly away from the blades 29 until the cam arm 58 moves past the yoke handle 48, whereupon the spring 47 returns the yoke to its normal position. However, the shaft 27 has not yet completed one revolution, and on continued rotation of this shaft, the connecting rods 29 move upwardly to elevate the movable blade 24. During this part of the operation, the coil springs 53 provide with the

threaded rods 54, a rigid connection between the arms 56 and the movable clamping bar 52, so that this bar is also elevated simultaneously with the elevation of the cutting blade 24. Thus a space of proper size is provided between the clamping bars to permit other wires to be conveniently passed between said bars and through the wire receiving openings of the stationary blades 19. It might be stated that during the operation of the machine, the coil springs 53 not only draw the movable clamping bar 52 to clamping relation with the stationary bars 51, but allow for the movement of the crank portions of the shaft in a downward direction to lower the cutting blade 24, after the movable clamping bar has reached the limit of its movement.

With a view to measuring or regulating the particular length of the wire to be stripped, I employ a gauge bar 59 of L-shaped formation in cross section, and position the bar directly at the rear of the wire receiving openings of the blades. Supported by the rear edge of the table are spaced brackets 60, each of which terminates at its upper end to provide a horizontally disposed portion 61 slotted as at 62. The gauge bar reposes upon these horizontal portions 61, and held associated therewith by small bolts and nuts 63, the bolts passing through the slots 62, so that the gauge bar can be moved toward or away from the stationary blades 19. By proper positioning the gauge bar with respect to these blades, any particular length of wire can be stripped, it of course being understood that the wires are merely passed through the openings in the blade until they contact the gauge bar 59.

The invention further embodies a device for shearing the wire or splitting the wire as the occasion may require, and this device embodies a movable cutting blade 64 carried by a movable head 65 which slides on a pair of spaced parallel rods 66 rising from the table top 13 at one end thereof. The blade 64 cooperates with a stationary blade 67 also supported on the table top 13, and the wire to be dealt with is placed between these blades. The movable head together with its blade 64 is moved downwardly toward the stationary blade by means operated from the shaft 27, which means includes an eccentric 68 supported by one end of the shaft and surrounded by an eccentric band 69. This band is extended to provide an arm 70 which rises above the top 13, and offset as at 71 to rise above the top, which arm is pivotally connected with the stem 62 of a cam 73. The cam is journaled between bearings 74 supported by the rods 66, the cam operating on the head 65 to move the latter downwardly as stated, the head is moved in this direction against

the tension of the springs 76 surrounding the rods 66, the springs assisting the mechanism in returning the head to its inactive position incident to the rotation of the shaft 27.

While it is believed that from the foregoing description, the nature and advantages of the invention will be readily apparent, I desire to have it understood that I do not limit myself to what is herein shown and described, and that such changes may be resorted to when desired as fall within the scope of what is claimed.

Having thus described the invention, I claim:

1. A wire stripping machine of the character described comprising a supporting structure, wire stripping means designed to receive and clamp the wires, means for automatically drawing the wires away from said means whereupon said wires are stripped, said last mentioned means including a yoke mounted for pivotal movement and movable toward and away from the stripping means, and a clamp carried by said yoke for clamping all of the wires to be stripped.

2. A wire stripping machine of the character described comprising a supporting structure, wire stripping means designed to receive and clamp the wires, means for automatically moving the wires away from said stripping means whereupon said wires are stripped, said means including a yoke mounted for rocking movements toward and away from said stripping means, and a clamp associated with said yoke for clamping all of the wires to be stripped, said clamp including a stationary bar and a relatively movable bar.

3. A wire stripping machine of the character described comprising a supporting structure, wire stripping means designed to receive and clamp the wires, a crank shaft mounted for rotation, means for rotating said shaft, a pivoted yoke mounted for movement toward and away from the stripping means, a clamp carried by the yoke and between which all of the wires are clamped and moved away from the stripping means when the yoke is moved in one direction, whereupon said wires are stripped, means carried by said shaft for rocking the yoke in one direction for the purpose specified, and means for returning said yoke to its normal position.

4. A wire stripping machine of the character described comprising a supporting structure, wire stripping means designed to receive and clamp the wires, a crank shaft mounted for rotation, means for rotating said shaft, a yoke mounted for rocking movement toward and away from the stripping means, means for normally holding said yoke substantially parallel with said means, a clamp carried by the yoke for

clamping all of the wires in fixed relation with said yoke whereby said wires are moved away from the stripping means when the yoke is moved in one direction, said wires being stripped when drawn from between the stripping means, said clamp including a fixed bar and a relatively movable bar, and means connecting the last mentioned bar with the crank portions of said shaft, whereby said clamp is alternately opened and closed incident to the rotation of the shaft and the rocking movements of said yoke.

5. A wire stripping machine of the character described comprising a supporting structure, wire stripping means designed to receive and clamp the wires, a crank shaft mounted for rotation, means for rotating said shaft, a clutch mechanism for controlling the rotation of the shaft, a yoke mounted for rocking movement toward and away from the wire stripping means, yieldable means for normally holding the yoke parallel with said stripping means, means carried by the shaft for swinging the yoke away from said stripping means, a clamp carried by said yoke for holding the wires fixed with relation to the yoke, whereby said wires are pulled away from the stripping means upon movement of the yoke in one direction, said clamp including a fixed bar and a sliding bar, and a connection between the shaft and said sliding bar whereby the latter is moved into and out of clamping relation with the fixed bar incident to the rotation of said shaft.

6. A wire stripping machine of the character described, comprising a supporting structure, wire stripping means including stationary blades arranged parallel thereon and designed to receive the wires therebetween, a movable blade arranged transversely of the stationary blade and adapted to clamp the wires between the stationary blades, all of said blades having cutting edges, and means for automatically drawing the wires away from the blades, whereupon said wires are stripped.

7. A wire stripping machine comprising a supporting structure, stripping means including stationary parallel blades designed to provide wire receiving openings therebetween, a movable blade arranged transversely of the stationary blade and having a notch in its lower edge for each wire receiving opening, whereby said wires are received by said notches and clamped between the stationary blades, means for controlling the movements of the movable blade whereby the latter is automatically moved into and out of active position, and means for automatically drawing the wires from between said blades while the latter are clamped whereupon said wires are stripped.

8. A wire stripping machine of the character

acter described comprising a supporting structure, stripping means including parallel stationary blades designed to provide wire receiving openings therebetween, a movable blade arranged transversely of the stationary blades, and adapted to impinge against the wires when received by said openings, a crank shaft mounted for rotation, means for rotating said shaft, a connection between the shaft and said movable blade whereby the latter is moved into and out of its active position, and means controlled by said shaft for drawing the wires from between said blades whereupon said wires are stripped.

9. A wire stripping machine of the character described comprising a supporting structure, stripping means including stationary parallel blades designed to receive the wires therebetween, a movable blade arranged transversely of the stationary blade and adapted to impinge against the wires to hold them fixed with relation to the stationary blades, a crank shaft mounted for rotation, means for rotating said shaft, a connection between the crank portions of the shaft and the movable blade to control the movements of the latter as the shaft is rotated, a yoke mounted for rocking movement toward and away from said blades, means for normally holding the yoke substantially parallel with said blades, means carried by the shaft for swinging the yoke away from said blades, a clamp carried by the yoke, for gripping the wires and pull-

ing the latter from between the blades when the yoke is swung away therefrom, whereupon said wires are stripped.

10. A wire stripping machine of the character described comprising a supporting structure, stripping means including stationary parallel blades designed to provide wires receiving openings therebetween, a movable blade arranged transversely of the stationary blades, and adapted to impinge against the wires to hold the latter fixed with relation to the stationary blade, a crank shaft mounted for rotation, means for rotating said shaft, a clutch mechanism for controlling the rotation of said shaft, connecting rods associated with the crank shaft and said movable blade to move the latter into and out of its active position as the shaft is rotated, a yoke mounted for rocking movements toward and away from said blade and controlled by the rotation of said shaft, a clamp carried by the yoke for gripping the wires and pulling them from between the blades when the yoke is swung outwardly, whereupon said wires are stripped, said clamp including a stationary bar, and a movable bar arranged in parallelism with the movable blade, and a connection between said connecting rods and said movable bar whereby the latter is elevated and lowered simultaneously with the movements of said movable blade.

In testimony whereof I affix my signature.

PETER W. KUCHMUK.