No. 849,672. PATENTED APR. 9, 1907.

P. FRANTZ.

FEED MECHANISM FOR WIRE FENCE MACHINES.

APPLICATION FILED MAR. 28, 1906.

3 SHEETS—SHEET 1.

Fig. 1.

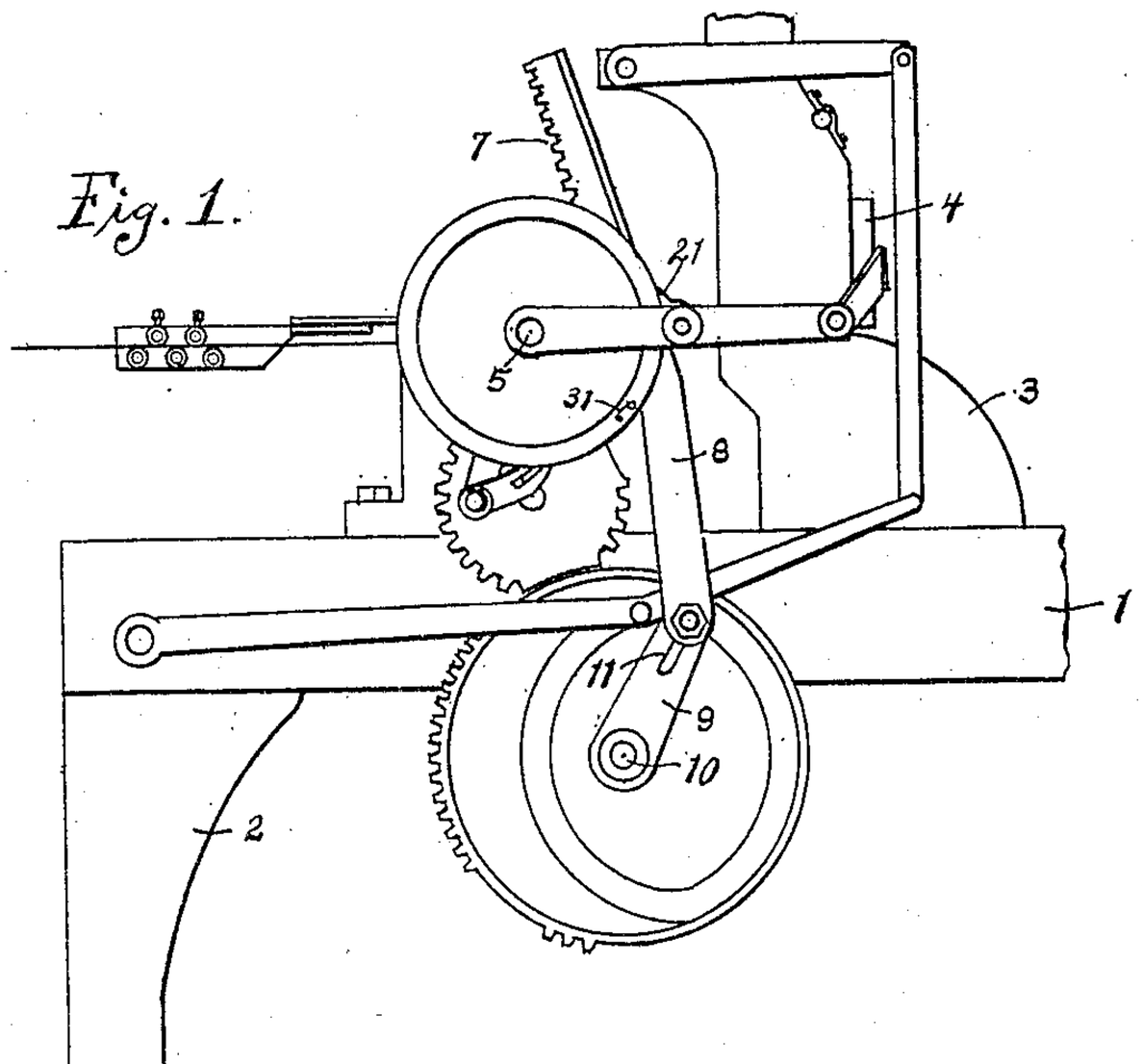
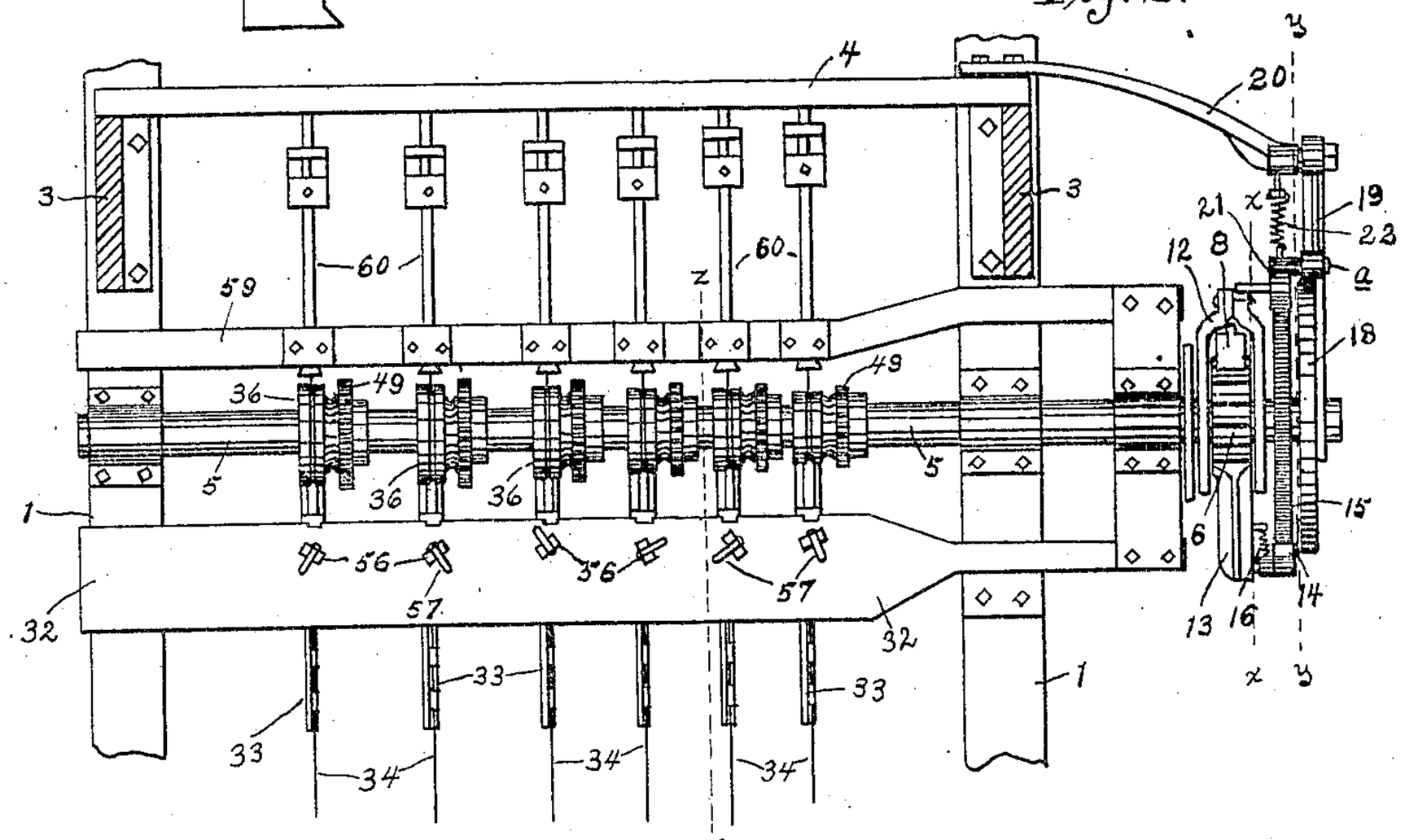


Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 3.

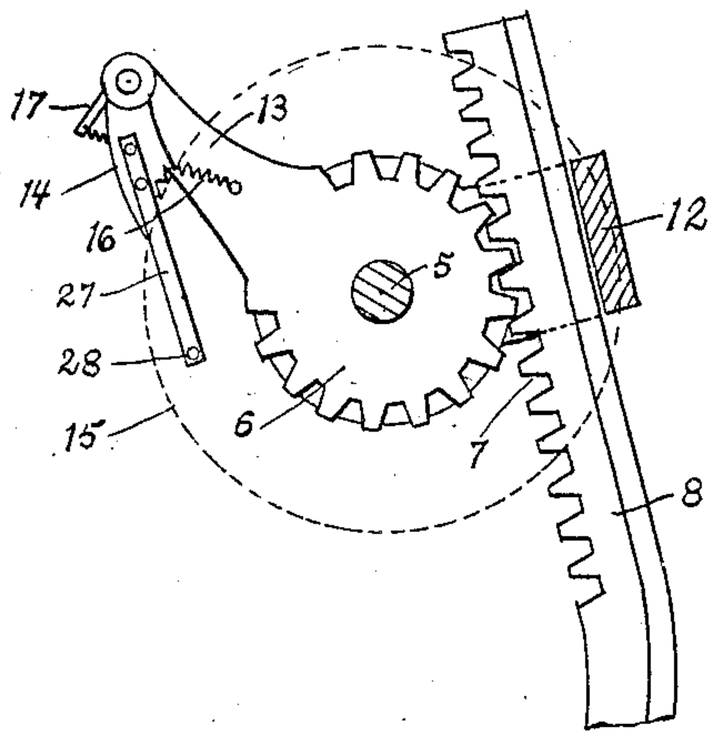


Fig. 4.

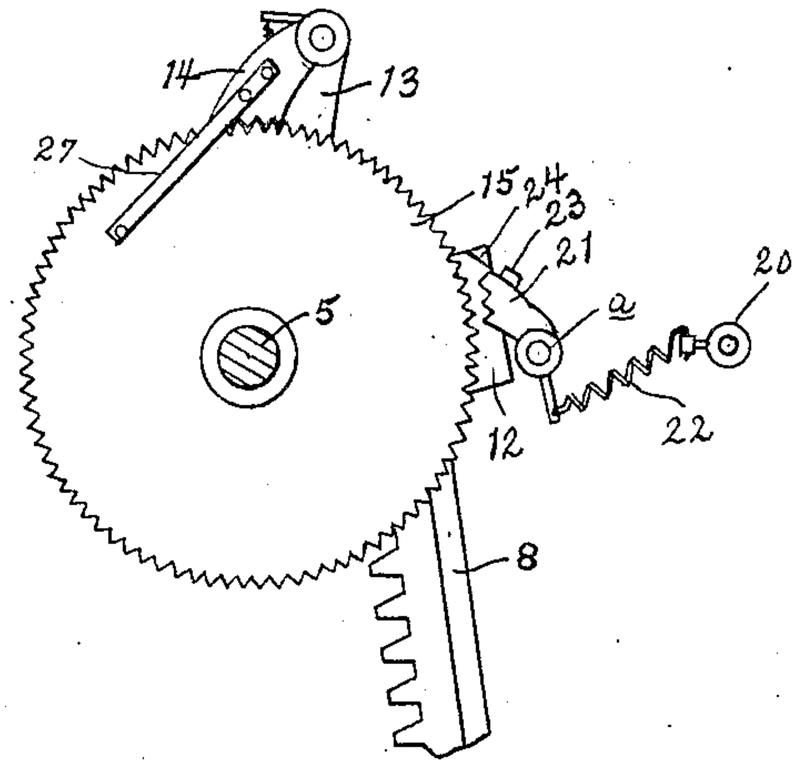


Fig. 5.

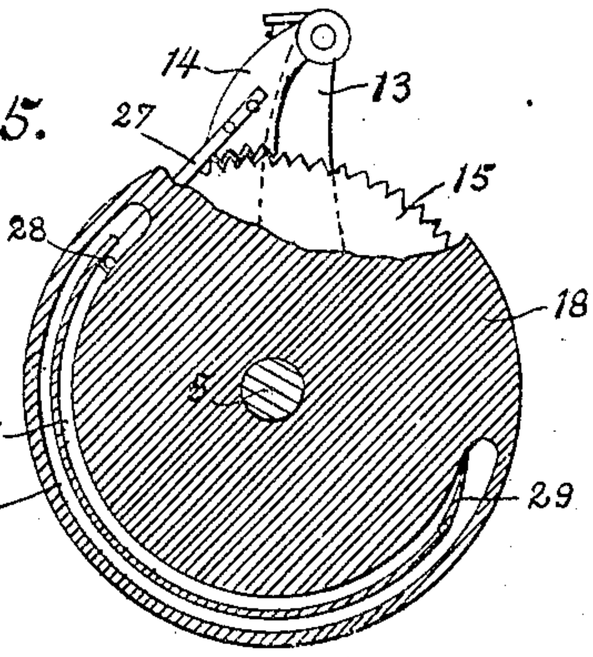


Fig. 6.

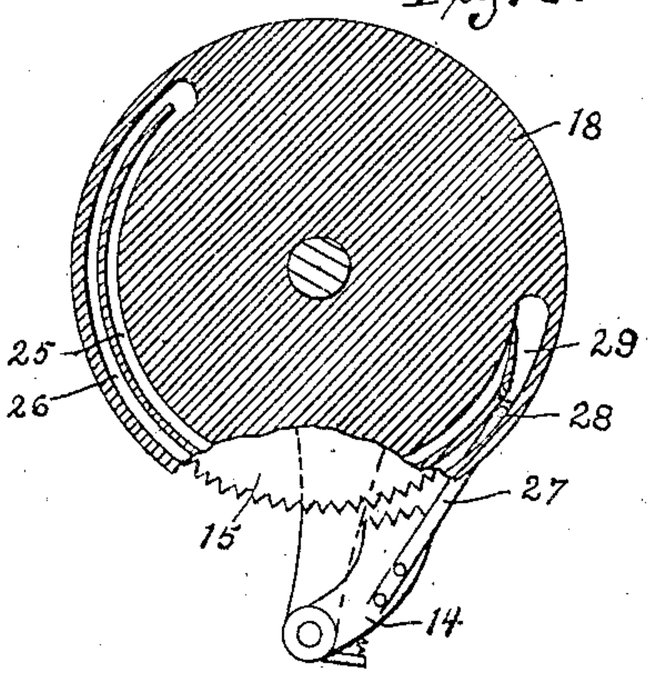
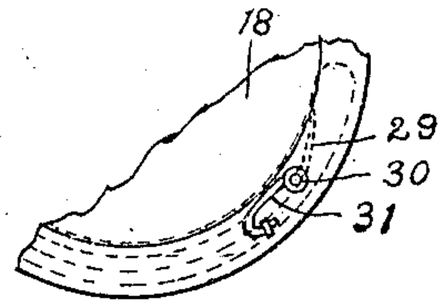


Fig. 7.



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3 SHEETS—SHEET 3.

Fig. 8.

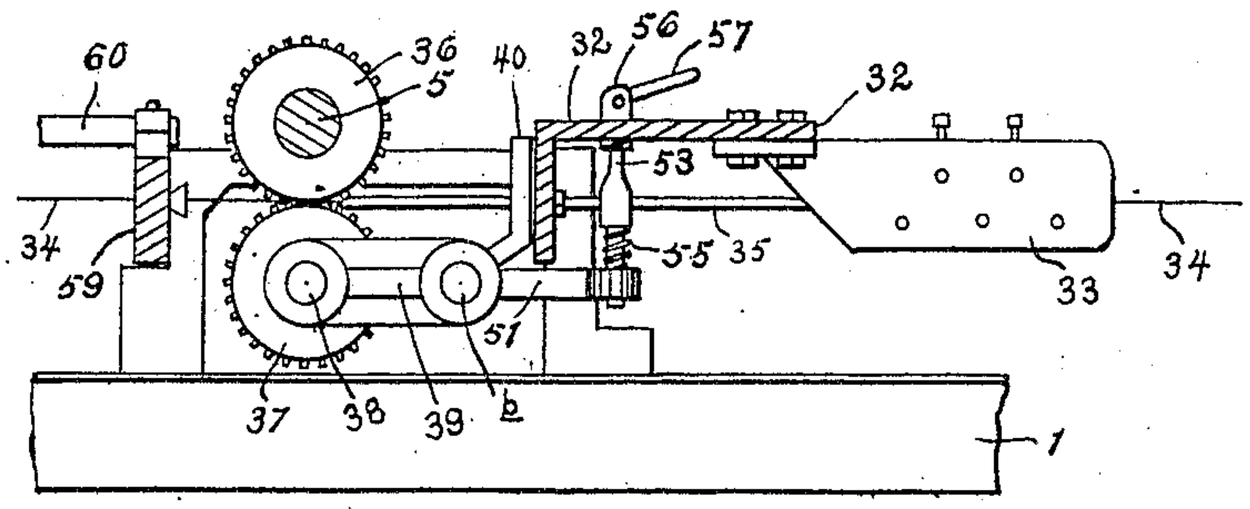


Fig. 9.

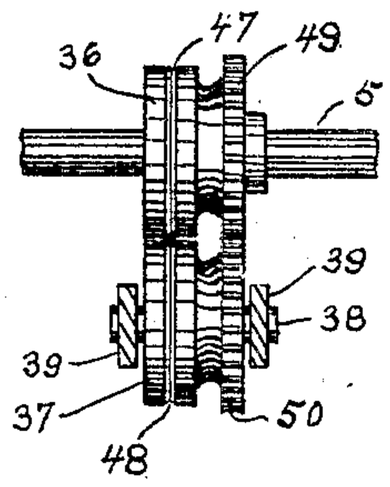


Fig. 10.

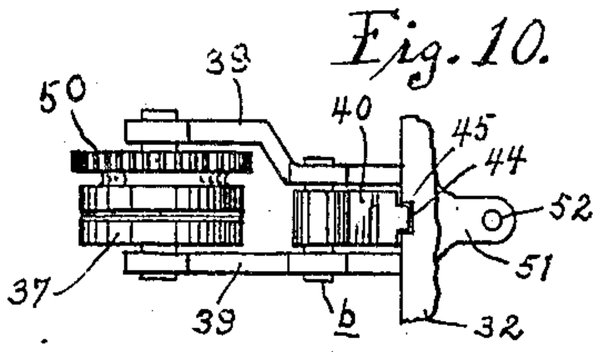


Fig. 11.

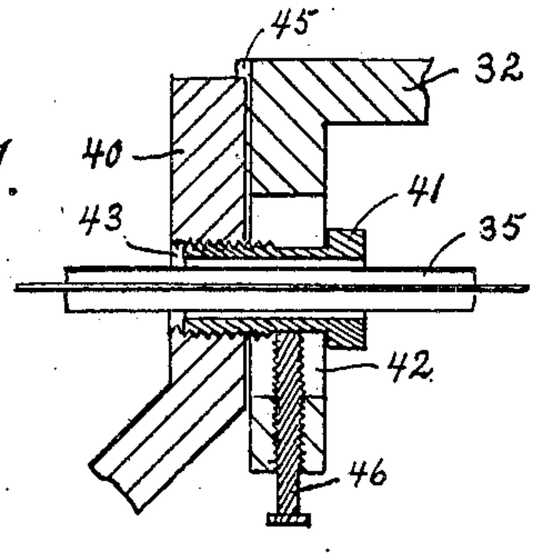
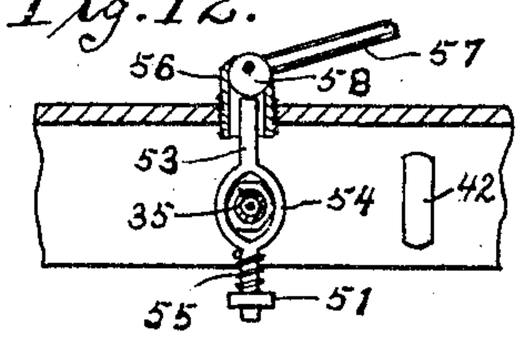


Fig. 12.



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UNITED STATES PATENT OFFICE.

PETER FRANTZ, OF DIXON, ILLINOIS.

FEED MECHANISM FOR WIRE-FENCE MACHINES.

No. 849,672. Specification of Letters Patent. Patented April 9, 1907.

Application filed March 28, 1906. Serial No. 308,516.

To all whom it may concern:

Be it known that I, PETER FRANTZ, a citizen of the United States, residing at Dixon, in the county of Lee and State of Illinois, have invented certain new and useful Improvements in Feed Mechanism for Wire-Fence Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention has reference to wire-fence machines, and relates more specially to novel mechanism for feeding into the machine those wires from which the stay-wires of the fence are formed.

My device is specially designed to be used in place of similar mechanism shown and described in Letters Patent No. 739,846, issued to me September 29, 1903, for improvements in wire-fence machines, and such device is shown and described herein as being applied to said machine. As set forth in said former patent, it is frequently desired to construct the fence with varying spaces between the strand-wires, necessitating a variation in the lengths of the several stays in a series. This can be readily accomplished by regulating the length of feed of the wires from which the stays are formed, and this invention pertains specially to mechanism for producing such result and devices by which such mechanism is operated.

While my invention is specially adapted for use in the machine above mentioned, its use is not limited thereto; but by a little adaptation it can be applied to any machine in which the above-named results are sought to be attained.

In the drawings, Figure 1 is a side elevation of the rear end of a machine containing my invention. Fig. 2 is a plan view of my device. Fig. 3 is a vertical section in the line *x x* of Fig. 2. Fig. 4 is a vertical section in the line *y y* of Fig. 2. Figs. 5 and 6 are vertical sections of the disk 18. Fig. 7 is a detail showing a segment of the face of such disk. Fig. 8 is a vertical cross-section in the line *z z* of Fig. 2. Fig. 9 is a front view of one pair of feed-rolls. Fig. 10 is a plan view of one of the lower feed-rolls and supporting mechanism. Fig. 11 is a rear elevation, partly in section, of the feed-roll-adjusting mechanism. Fig. 12 is a vertical cross-section through the angle-plate 32 and supporting means for the lower feed-roll.

Similar numbers refer to similar parts throughout the several figures.

1 represents a portion of the frame of the machine supported on the usual legs 2. (One only shown.) Upon the sides of the frame is fixed a pair of supports 3 3, to which is secured a cross-beam 4. Supported on the frame 1 is a transverse rotary shaft 5, near one end of which is loosely supported a gear-pinion 6, engaged and actuated by a rack 7 on the rack-arm 8. The lower end of the rack-arm 8 is pivoted to the outer end of a crank 9, fixed on the end of a rotary shaft 10, which is one of the main power-shafts of the machine. Near its outer end the crank 9 is provided with a longitudinal slot 11, by means of which the lower end of the rack-arm 8 can be adjusted with reference to the shaft 10 and the length of stroke of such arm increased or diminished. Contact of the arm 8 with the gear-pinion 6 is maintained by means of a swinging frame 12, loosely supported on the shaft 5 on each side of the pinion 6.

Integral with the pinion 6 is an arm 13, to the outer end of which is pivotally secured a toothed dog 14, engaging the periphery of a toothed wheel 15, fixed on the shaft 5 adjacent to the pinion 6. The dog 14 is held normally in contact with the wheel 15 by means of a contractile coiled spring 16, secured at one end to the face of the arm 13 and at the other end to a post 17, fixed in the bearing of the dog 14.

Loosely supported on the shaft 5 near the wheel 15 is a disk 18, prevented from rotation by means of an arm 19, integral therewith, the outer end of such arm being secured to a brace 20, supported on the cross-beam 4. Pivoted in the arm 19, as at *a*, is a dog 21, provided with teeth which are adapted to engage the teeth of the wheel 15 and prevent the rearward movement thereof. The dog 21 is held normally in engagement with the wheel 15 by means of a contractile coiled spring 22, secured at one end to the brace 20 and at the other end to a pin extending downwardly from the dog 21.

Fixed to the dog 21 is a small arm 23, adapted to be engaged and forced outwardly by the frame 12 in the upward movement thereof. This action is facilitated by means of a beveled face 24 on the upper part of said

frame. The movement of the arm 23 outwardly operates to disengage the dog 21. In the movement of the rack-arm 8 downwardly and to the left the frame 12 swings downwardly, permitting the dog 21 to engage the wheel 15. As the lower end of the arm 8 moves toward the right and upwardly again the frame 12 is returned to its upper position, as shown in Figs. 3 and 4.

Each movement of the rack-arm 8 gives to the shaft 5 practically a half-rotation, the upward movement thereof carrying the arm 13 from a position at the top of the wheel 15, as seen in Fig. 4, to a point on the lower edge thereof, and the downward movement of the arm 8 returning it to its former position. In the return movement of the arm 13 it is desired to have the teeth on the dog 14 out of engagement with those on the wheel 15, and this is accomplished by the following means:

In the inner face of the disk 18 is an inner segmental track 25 and an outer track 26, concentric therewith, such tracks communicating at their ends. Secured to the outer face of the dog 14, so as to project between the wheel 15 and disk 18, is an arm 27, provided at its inner end with a follower 28, engaging the tracks 25 and 26. When the follower is in the outer track 26, it serves to hold the dog 14 outwardly and out of engagement with the wheel 15, as shown in Fig. 6. When it is in the inner track 25, engagement of the wheel 15 by the dog 14 is again permitted. As the arm 13 reaches the end of its upward movement the weight of the dog 14 causes the follower to pass around the dividing-strip between the two tracks, and at the end of the downward movement of such arm the follower passes again from the track 25 to the track 26. At the lower end of said tracks the transfer of the follower from the inner to the outer one thereof is assured by means of a wedge-shaped switch 29, pivoted between the tracks and normally closing the inner track 25, as shown in Fig. 6. The pivot-pin 30 of the switch extends outwardly through the outer face of the disk 18 and is held in position by a spring 31, which permits the opening of the switch for the passage of the follower 28 and then returns it to its former position.

The timing of the parts hereinbefore described is such that when the arm 13 reaches the end of its downward movement and the dog 14 is disengaged from the wheel 15 such wheel is engaged and held from turning by the dog 21, and when said wheel is again engaged by the dog 14 the dog 21 is released. It will be apparent that the operation of the parts before described will result in the intermittent partial rotation of the shaft 5.

Supported transversely of the machine on the frame 1 is an angle-plate 32, to the rear edge of which is attached a series of straightening-heads 33, through which a series of wires 34 is introduced into the machine, each of said wires passing through a tube 35, supported by the plate 32, as hereinafter shown. By such tubes the wires 34 are directed to and beneath a series of feed-rolls 36, fixed on the shaft 5. Beneath each of the rolls 36 is a feed-roll 37, supported on a short shaft 38, journaled in the free end of a frame 39, pivotally supported, as at *b*, by a bracket 40, secured to the angle-plate 32, as follows: A hollow bolt 41, provided with an exterior thread, passes through a slot 42 in the plate 32 and into a similarly-threaded opening 43 in the bracket 40. To maintain the vertical position of the bracket 40, such bracket is provided with a vertical rib 44, held in a channel 45 in the face of the plate 32. A set-screw 46, held in the lower part of the plate 32, impinges with its inner end upon the bolt 41 and aids in holding such bolt in place.

The feed-roll 36 is provided with an annular groove 47 and the roll 37 with a similar groove 48, whereby the wire 34 is held in place between such rolls. Integral with the roll 36 is a gear-wheel 49, meshing with and actuating a similar gear 50, integral with the roll 37. The frame 39 is extended beneath the plate 32 into an arm 51, provided with a perforation 52, in which is inserted the lower end of a pin 53, provided with a central frame 54. Between the frame 54 and arm 51 is interposed an extensile coiled spring 55. The pipe or tube 35 passes through the frame 54 and bolt 41, in which it is supported.

A short cylinder 56 is held in the plate 32 above the pin 53 by means of a thread on the outer face thereof engaging a similar thread in a corresponding opening in the plate. Pivoted in the upper end of the cylinder 56 is a small arm 57, on the pivotal end of which is an eccentric-cam 58. The upper end of the pin 53 extends upwardly into the cylinder 56 and is engaged by the cam 58. By lowering the arm 57 the pin 53 is forced downwardly, increasing the tension of the spring 55, and thereby increasing the pressure of the roll 37 against the roll 36. The tension can be further regulated by raising or lowering the cylinder 56 in its seat.

By the operation of the rolls 36 and 37 the wire 34 is drawn into the machine, passing from such rolls through a cross-bar 59, supported transversely of the machine and beneath a bar 60, upon which is supported the cutting mechanism. As this is not involved in the present application, no further reference thereto will be made.

As hereinbefore stated, the purpose of this invention is to provide means for feeding a series of wires to be cut into stays of varying lengths, and this is accomplished by making the rolls 36 of varying diameters, those of a larger diameter introducing into the machine with each movement of the shaft 5 a greater length of wire than those of a smaller

diameter. The size of the lower rolls 37 need not necessarily vary in accordance with the upper rolls, but they can be made of a uniform size, as the wires are dependent upon the operation of the upper rolls 36 for their movement.

In order that the wires may be properly drawn into the machine, there must be a sufficient pressure of the rolls 37 against the rolls 36, and, as before mentioned, this can be controlled by means of the tension devices acting on the end of the arm 51. By reason of the varying diameters of the rolls 36 the rolls 37 must necessarily be supported at different heights by the brackets 40. This can be readily accomplished by adjusting each of such brackets independently upon the cross-plate 32 by loosening the bolt 41 and raising or lowering the set-screw 46, as may be desired. The bolt 41 is then tightened, holding the bracket 40 and parts supported thereby in the adjusted position.

The use of the gear-wheels 49 and 50 to communicate the movement of the feed-roll 36 to the roll 37 is not essential. When the pressure of the lower roll against the upper one is sufficient, the friction of the upper roll upon the lower one will cause the rotation thereof, and the movement of the wire 34 into the machine will be thereby accomplished. A more positive action will be secured, however, by the use of the gear-wheels.

In the drawings a machine is shown containing six sets of feed-rolls and providing for the introduction of a like number of wires 34 into the machine; but this number can be increased or diminished at will.

If it is desired to increase or diminish the length of movement of the entire set of feed-rolls, this can be done by adjusting the position of the lower end of the rack-arm 8 on the crank-arm 9. An adjustment thereof toward the outer end of the crank-arm will increase the length of stroke of the rack-arm and give a greater rotation to the shaft 5 and rolls 36 thereon, while an adjustment of such arm in the opposite direction will have a contrary effect.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. In a device of the class named, the combination of the transverse rotary shaft 5, suitably mounted in the machine; a series of feed-rolls 36, fixed on the shaft 5; a series of independent feed-rolls 37, supported beneath the rolls 36; the gear-pinion 6, loosely mounted on the shaft 5; the rack-arm 8, actuating the pinion 6; the toothed wheel 15, fixed on the shaft 5; means for operating the rack-arm 8 to give a partial rotation to the pinion 6, and means for imparting the movement of the pinion 6, caused by the upward movement of the rack-arm 8, to the wheel 15, substantially as shown and set forth.

2. In feed mechanism for wire-fence machines, the combination of the rotary shaft 5, suitably mounted in the machine; a series of feed-rolls 36, fixed on the shaft 5; a series of independent feed-rolls 37, supported beneath the rolls 36; the toothed wheel 15, fixed on the shaft 5; the arm 13, loosely supported on the shaft 5; the dog 14, pivotally attached to the end of the arm 13, and engaging the wheel 15; means for holding the dog 14 normally in engagement with the wheel 15; means for giving the arm 13 a partial rotation on the shaft 5; means for holding the dog 14 out of engagement with the wheel 15 during the return movement of the arm 13; and means for holding the wheel 15 from movement while the dog 14 is out of engagement therewith; substantially as shown and for the purpose described.

3. In a device of the class named, the combination of the rotary shaft 5, suitably mounted in the machine; the pinion 6, loosely supported on the shaft 5; the rack-arm 8 actuating the pinion 6; the arm 13, integral with the pinion 6; the dog 14, pivotally supported at the outer end of the arm 13; the toothed wheel 15, fixed on the shaft 5 and engaged by the dog 14; the disk 18, loosely supported on the shaft 5 and provided in its inner face with tracks 25 and 26; the arm 27, secured to the dog 14 and provided with a follower 28 adapted to be engaged by the tracks 25 and 26; means for suitably operating the rack-arm 8; means for holding the disk 18 from turning on the shaft 5; and means for holding the wheel 15 from turning while the dog 14 is disengaged therefrom, substantially as shown and described.

4. In a device of the class named, the combination of the rotary shaft 5, suitably mounted in the machine; the series of feed-rolls 36, fixed on the shaft 5; the angle-plate 32, mounted in the machine, transversely thereof; a series of brackets 40, supported on the angle-plate 32, so as to be vertically adjustable thereon; a series of frames 39, pivotally supported by the brackets 40, and provided with arms 51; a series of feed-rolls 37, rotatably mounted in the free ends of the frames 39; means for forcing the ends of the arms 51 downwardly to increase the pressure of the rolls 37 against the rolls 36; and means for intermittently rotating the shaft 5, substantially as shown and set forth.

5. The combination of the angle-plate 32, suitably mounted in the machine; a bracket 40, fixed to the face of the plate 32; a frame 39, pivotally supported by the bracket 40; a feed-roll 37, rotatably mounted in the free end of the frame 39; the arm 51, integral with the frame 39, and provided with a perforation 52; a pin 53, supported in the per-

foration 52, and provided with a frame 54; the spring 55, interposed between the frame 54 and arm 51; and means for forcing the pin 53 downwardly, to increase the tension of the spring 55, substantially as and for the purpose named.

6. The combination of the angle-plate 32, suitably mounted in the machine; a bracket 40, fixed to the face of the plate 32; a frame 39, pivotally supported by the bracket 40; a feed-roll 37, rotatably mounted in the free end of the frame 39; the arm 51, integral with the frame 39, and provided with a perforation 52; the pin 53 having its lower end inserted in the perforation 52, and provided with a central frame 54; the spring 55, interposed between the frame 54 and arm 51, on the pin 53; the cylinder 56, mounted in the plate 32, so as to be vertically adjustable therein; the eccentric 58, pivoted in the upper end of the cylinder 56, and adapted to engage the upper end of the pin 53; and means for actuating such eccentric, substantially as shown and for the purpose named.

In testimony whereof I affix my signature in presence of two witnesses.

PETER FRANTZ.

Witnesses:
H. G. REYNOLDS,
JOHN E. EARLE.