

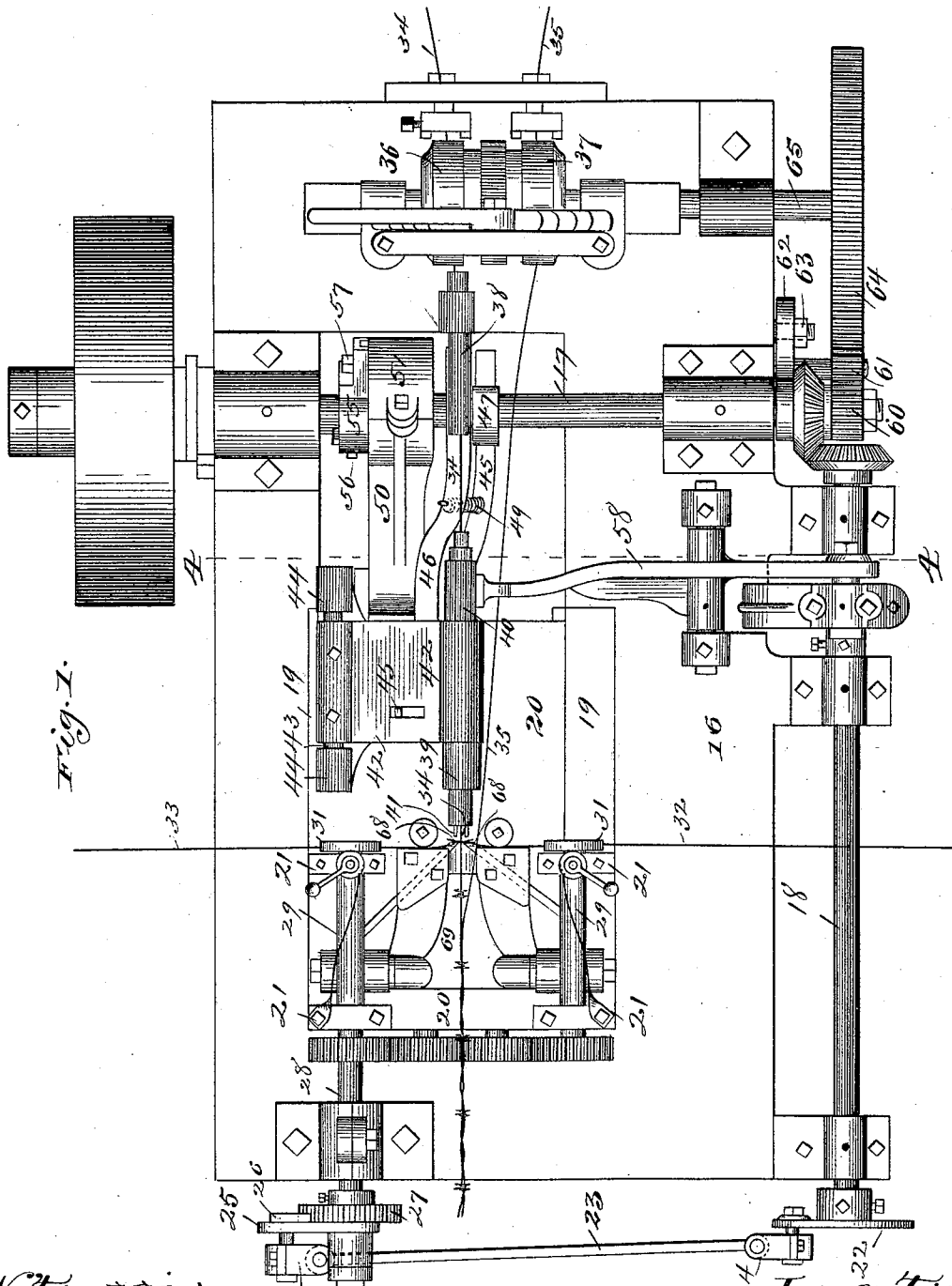
(No Model.)

5 Sheets—Sheet 1.

S. SWANBUM.
BARB WIRE MACHINE.

No. 520,459.

Patented May 29, 1894.



Witnesses,
D. J. Mann,
F. C. Goodwin

Inventor,
Sanford Swanbun
By Offield Towle Smith
Attys.

(No Model.)

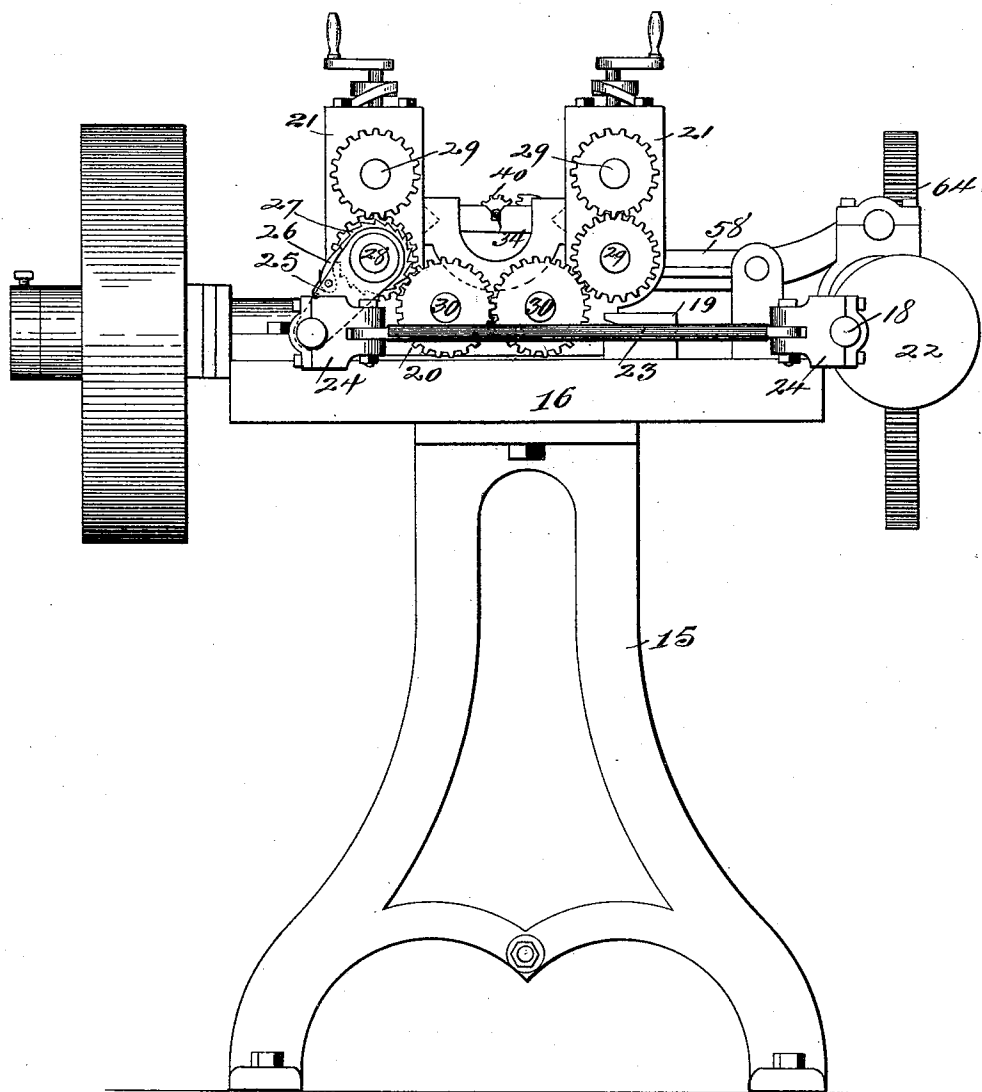
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Fig. 2.



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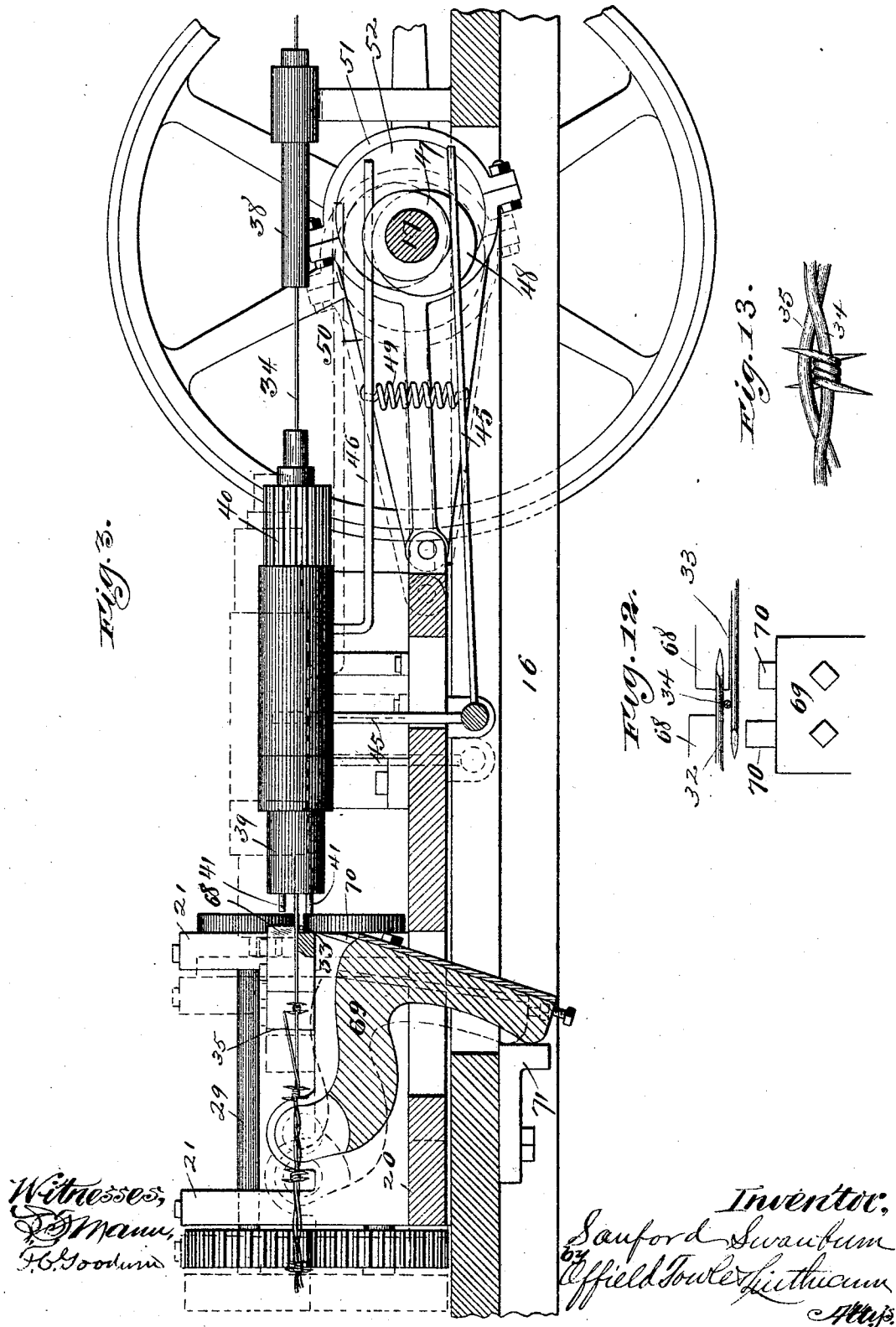
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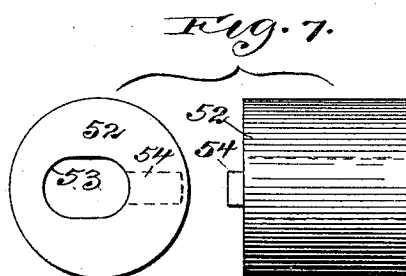
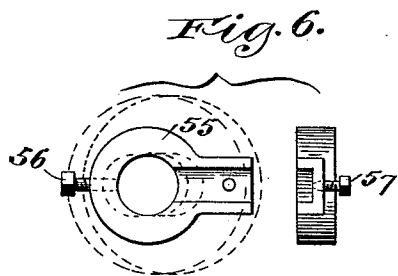
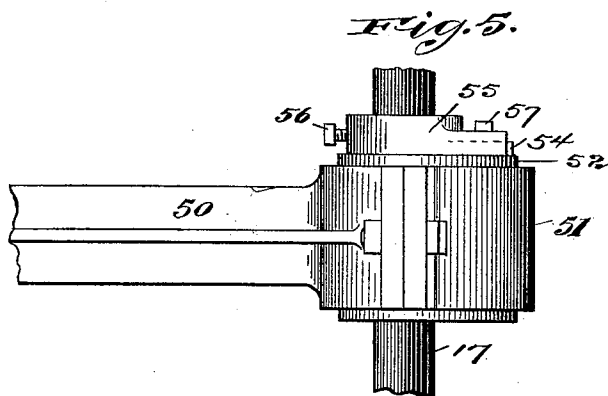
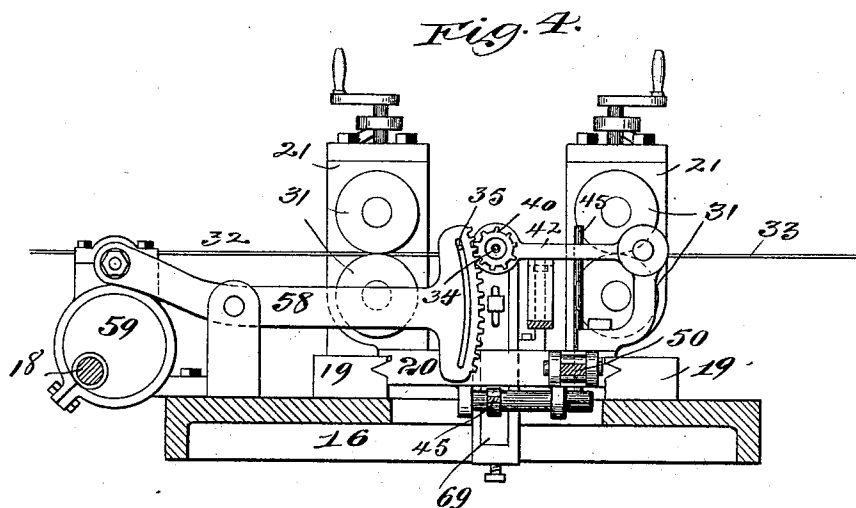
(No Model.)

5 Sheets—Sheet 4.

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No. 520,459.

Patented May 29, 1894.



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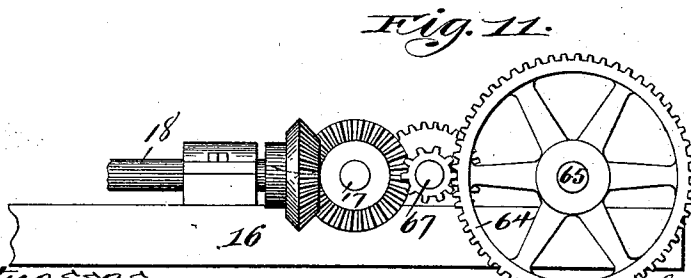
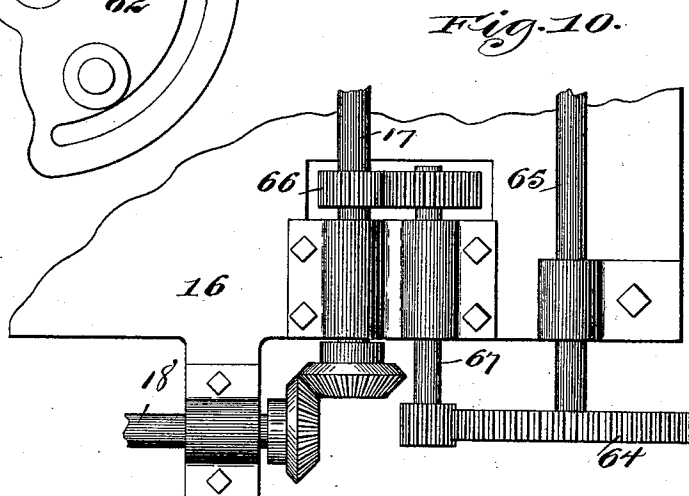
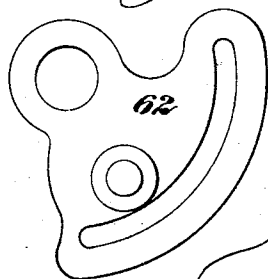
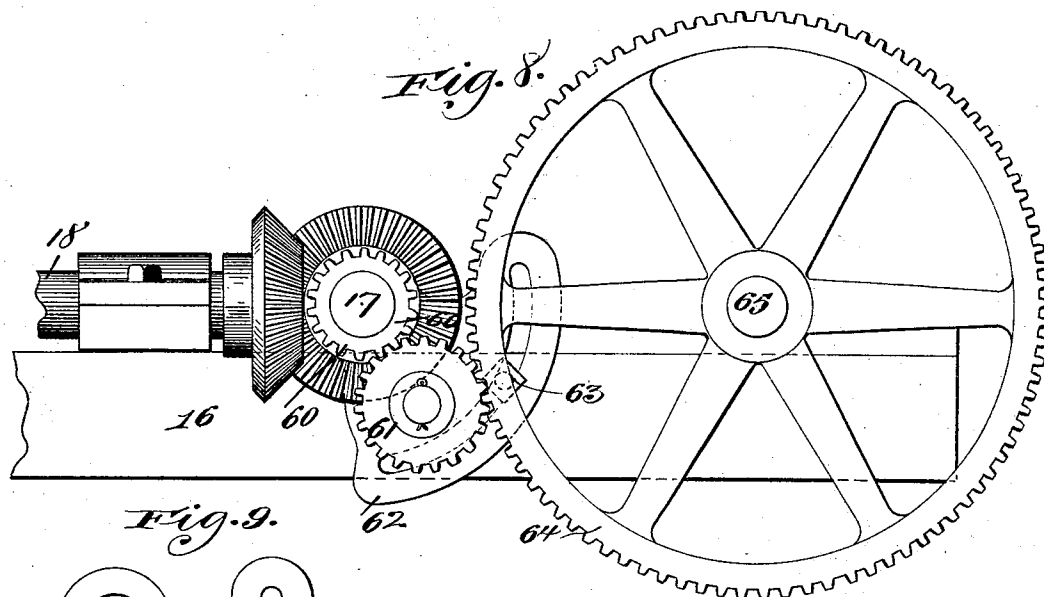
(No Model.)

5 Sheets—Sheet 5.

S. SWANBUM.
BARB WIRE MACHINE.

No. 520,459.

Patented May 29, 1894.



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UNITED STATES PATENT OFFICE.

SANFORD SWANBUM, OF DE KALB, ILLINOIS, ASSIGNOR TO THE I. L. ELLWOOD MANUFACTURING COMPANY, OF SAME PLACE.

BARB-WIRE MACHINE.

SPECIFICATION forming part of Letters Patent No. 520,459, dated May 29, 1894.

Application filed June 13, 1893. Serial No. 477,436. (No model.)

To all whom it may concern:

Be it known that I, SANFORD SWANBUM, a citizen of the United States, residing at De Kalb, in the county of De Kalb and State of Illinois, have invented certain new and useful Improvements in Barb-Wire Machines, of which the following is a specification.

This invention relates to a machine for making barbed wire, having preferably two strand wires cabled or twisted together and four pointed barbs which are coiled at their middle about one of the strand or cable wires and are bound thereon by the fellow or binding wire.

15 The object of the invention is to produce a machine whereby four pointed barbs having their points arranged at right angles to the strands of the cable may be rapidly and economically produced.

20 To this end the machine is so organized that the strand wires move continuously through the machine while the wires from which the barbs are formed are fed from opposite sides of the machine and at right angles to the direction of movement of the strand wires, the barb wires being fed intermittently. This capacity of the machine for applying the barbs without interrupting the movement of the strand wires forming the cable is one of the features of the machine.

30 Another feature of the machine relates to a construction whereby the barbs are severed from the barb stock wires by a shear cut, the bevel of which is upon the outer sides of the points of the barbs. Heretofore no one, so far as I am aware, has produced a machine capable of making four point barbed wire and cutting the points so that the bevels thereof are on the outside. The result has been a ragged or rough looking fence, the barbs when cut with their bevels upon the inside of the point standing at an acute angle with reference to the strand wire. The product of this machine is a barbed wire in which the 45 points of the barb form substantially a right angle with the strand or cable wires, and the fence is not only neater in appearance but the points of the barbs standing at a right angle to the fence wire increase the deterrent efficiency of the fence and render the 50

barbs less likely to be bent down in a line with the wire.

The mechanical features of the machine which are novel relate, first, to a reciprocating carriage upon which the barb twisting spindle, the cutters and the feed mechanism for the barb wires are mounted; second, to a pivoted twister spindle which is automatically raised after the application of the barbs in order that the latter may pass over the knives; third, to a retractive movement of the twister spindle which enables the stock of the barb to be wound about one of the strand wires helically, the bodies of the two barbs being intertwined and the coiling being in a direction opposite to the direction of the movement of the strand wire; fourth, to a novel arrangement of the gearing whereby the distance between barbs may be varied so as to produce what is designated as a thick set wire or a wire having its barbs more widely separated; fifth, to a novel construction of mechanism whereby the distance of reciprocation of the carriage may be varied.

In the accompanying drawings, Figure 1 is a plan view of the machine. Fig. 2 is an end elevation. Fig. 3 is a broken elevation, sectional through the longitudinal center of the machine. Fig. 4 is a transverse sectional elevation on the line 4-4 of Fig. 1. Figs. 5, 6 and 7 are detail views of an eccentric which is adjustable so as to vary the travel of the carriage. Figs. 8 to 11 inclusive are detail views showing two forms of gearing for varying the speed of feed of the strand wires. Fig. 12 is a detail view of the cutters. Fig. 13 shows the product of my machine.

In the drawings, 15 represents the frame or stand upon which the machine is mounted.

The operative parts of the machine are carried by the stationary base or bed 16, which carries the bearings for the main shaft 17, and also for a driven shaft 18, from which power is taken to drive the feed mechanism for the barb wires, and for operating the twister spindle. Said bed is also provided with ways 19, in which reciprocates a carriage comprising a bed plate 20, and standards erected thereon, marked 21, and in which the bearings for the arbors of the feed wheels 100

for the barbed wires are furnished. The shaft 18 has a crank wheel 22 thereon, and its crank pin drives a pitman 23, said pitman being pivoted at its respective ends to boxes 24, one of which is carried by the crank pin and the other of which is connected to the crank pin of an arm 25 carrying a pawl 26, which engages the teeth of a ratchet 27, the latter being mounted on a shaft or arbor 28, which imparts motion to the train of gears carried upon the several arbors 29 and the studs 30 through the gear wheels carried by said arbors and studs as clearly shown in Fig. 2, said arbors 29 each carrying feed wheels 31 which feed the wires 32, 33, from which the barbs are cut.

The strand wires are marked 34, 35, and they are fed by the wheels 36, 37, which are arranged in pairs, the upper ones being shown in Fig. 1. The wire 34 is carried through a cylindrical guide 38 and passes through the twister spindle 39. Said spindle is provided at its rear end with the gear 40, and at its front end with the twister pins 41. Said twister spindle is rotatably mounted in a pivoted arm 42, said arm being sleeved upon a shaft 43, mounted so that it may rock in the bearings 44, which are carried by the bed 20. The arm 42 is perforated, as seen in Fig. 1, and one end of the bell crank lever 45 projects into the slot, the bell crank being pivoted on the carriage bed and its other member projecting below the main driving shaft. A second bent arm 46 is rigidly secured at one end to the under side of the vibrating arm 42 and its rear end projects back over the driving shaft, and said shaft has mounted thereon two eccentrics 47, 48, on one of which the bell crank 45 rides, and upon the other of which the rear end of the bent lever 46 rides. When the end of the arm 46 is raised by its cam it raises the arm 42 carrying the twister spindle. The bell crank 45 and the lever 46 are coupled by the spring 49 which holds them in contact with their respective cams. The carriage is reciprocated by the pitman 50, whose rear end carries a strap 51 which circumscribes an eccentric 52, said eccentric having a slot 53 through which the shaft 17 passes. The eccentric has also a rib or block 54 on its end which is adapted to slide in a groove formed in a collar 55, said collar having a cylindrical bore through which the shaft 17 passes, and having the set screws 56, 57, the former serving to confine the collar upon the shaft, and the latter to bind the slotted eccentric in any position to which the length of its slot adapts it to be adjusted. The twister spindle is rotated alternately in opposite directions by means of the pivoted rack lever 58 which is driven by an eccentric 59 on the shaft 18.

The mechanism for driving the feed wheels for the strand wires may be of the usual construction, but I have shown in Figs. 8 to 11 inclusive two novel forms of gearing, whereby the feed of the strand wires may be varied to adapt the machine for making wire

having thick set barbs or wire with longer spaces between the barbs. In Fig. 8 the main shaft 17 is shown provided with a spur gear 60 enmeshing a pinion 61 which is carried by a stud on a sector 62 adapted to be secured in any desired position to which its slot permits it to be adjusted by means of the bolt and nut 63. The pinion 61 drives a gear wheel 64 which imparts motion to a shaft 65, whereby the pairs of feed wheels 36 and 37 are driven. By substituting for the gear 64 another of a different size and adjusting the sector to correspond therewith, the feed of the strand wires may be varied, and at the same time the length of the reciprocation of the carriage will be correspondingly varied by adjusting the eccentric 52.

In Fig. 10 I have shown another form of gearing in which a pinion 66 is mounted on the main shaft 17 and drives a short countershaft 67 which imparts motion to the shaft 65. By removing the gear 64 and the pinion which drives it and substituting others of different size, the feed may be varied.

By referring to Figs. 3 and 12, the manner of twisting and severing the barb will be best understood. The barb wires are fed in across the path of the strand wire 34, and above and below respectively as shown in Fig. 12, and beneath the shearing blocks 68. As the carriage is advanced the twister pins 41 respectively engage the ends of the wires from which the barbs are formed and the twister spindle, being rotated, the ends of the wire from which the barbs are afterward severed are coiled about the strand wire 34, and to effect this without wrapping the barbs upon each other a slight backward movement of the twister spindle is effected through the bell crank 45, which shifts the arm carrying the twister spindle, withdrawing it to a distance determined by the eccentric 47, the boxes 44 being separated sufficiently to permit this slight backward movement. The coiling of the ends of the barb wire about the strand wire having been effected, the next movement of the machine is to sever the coiled barbs from the stock, and this is effected by means of the pivoted arm 69, which is mounted on the carriage and at its heel is provided with the shearing blades 70. A bent end of this arm 69 depends through a slot in the bed 20 and through the open body of the bed 16, the latter having a striking block 71 thereon which engages the end of the arm 69, rocking it on its pivot and causing its shearing blades to engage the wires from which the barbs are formed, and shear them by a beveled cut on the outside of their points. In order now to permit the barbs to pass over the shearing block, the arm carrying the twister spindle must be raised and this is effected in due order and sequence by the arm 46 and its cam 48. When the barbs have cleared, the lean side of the eccentric 48 permits the twister spindle to drop down, thus carrying the strand wire into proper position for the inserting of

the barb wire above and below it, their movements being intermittent by reason of the ratchet mechanism previously described.

The product of the machine is shown in Fig. 13, and the appearance of its barbs is much better than that of the common four point barbs. The fellow or binding wire 35 is fed through a slot in the rack lever 58 and is twisted with the strand wire 34, after the barbs are applied, in the usual or any suitable manner so as to bind the barbs.

I claim—

1. In a barbed wire machine, the combination, with means for continuously feeding a strand wire and means for intermittently feeding barb wires across its path, of a reciprocating carriage having a twister spindle rotatably mounted thereon and capable of endwise movement independent of its carriage, means for reciprocating the carriage, and means for rotating the twister spindle and retracting it during its rotation, substantially as described.

2. In a machine for making barbed wire, the combination, with means for continuously feeding a strand wire and for intermittently feeding barb wires across the path thereof, of a reciprocating carriage, a twister spindle carrying the strand wire and twister pins rotatably mounted upon said carriage, the said spindle being capable of being raised, and shearing mechanism whereby the barb wire may be severed by a beveled cut on the outside of its barbs and said barbs raised to pass the shears, substantially as described.

3. In a barb wire machine, the combination with the reciprocating carriage, of a revolvable and vibratory twister spindle, and means for retracting said spindle during the act of coiling the barbs, substantially as described.

4. In a barbed wire machine, the combination with the reciprocating carriage, of a revolvable and vibratory twister spindle, and

means for retracting said spindle, and a shearing mechanism mounted upon the carriage and adapted to sever the barb wire by a beveled cut upon the outside of said barbs, whereby the barbs have their points disposed at substantially right angles to the strand wires, substantially as described.

5. In a barbed wire machine, the combination, with the reciprocating carriage having a twister spindle and a shearing mechanism mounted upon such carriage, of means for reciprocating said carriage, consisting of a pitman and a variable eccentric, substantially as described.

6. In a barbed wire machine, the combination, with the reciprocating carriage and a twister spindle and shearing mechanism mounted upon such carriage, of means for reciprocating the carriage, comprising a variable eccentric, and means for feeding the strand wire, said latter means being also capable of adjustment whereby the distance between adjacent barbs may be varied, substantially as described.

7. In a barbed wire machine, the combination with the means for feeding the strand wires and barb wires, of means for forming and severing the barbs, a reciprocating carriage carrying the barb forming and severing mechanism, the feed mechanism for the barb wire being also mounted upon and reciprocating with said carriage, a ratchet mechanism for operating said feed mechanism intermittently, and a pitman for driving said ratchet mechanism, said pitman being pivotally connected at each of its ends, whereby it is adapted to follow the movement of the carriage, substantially as described.

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