

(No Model.)

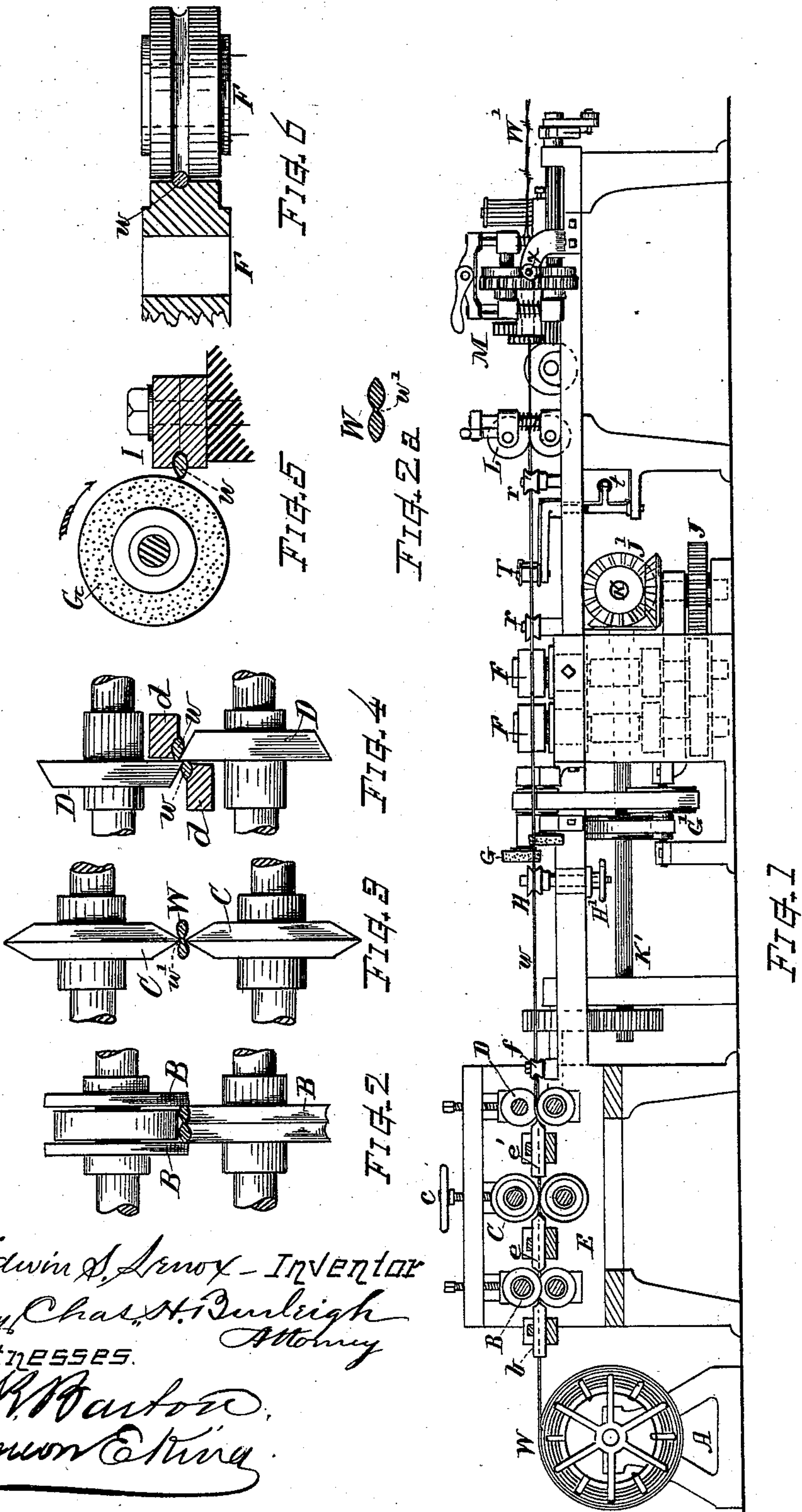
3 Sheets—Sheet 1.

E. S. LENOX.

MACHINE FOR MAKING BARBED WIRE FENCING.

No. 529,036.

Patented Nov. 13, 1894.



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By Chas. H. Burleigh Attorney
Witnesses.
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(No Model.)

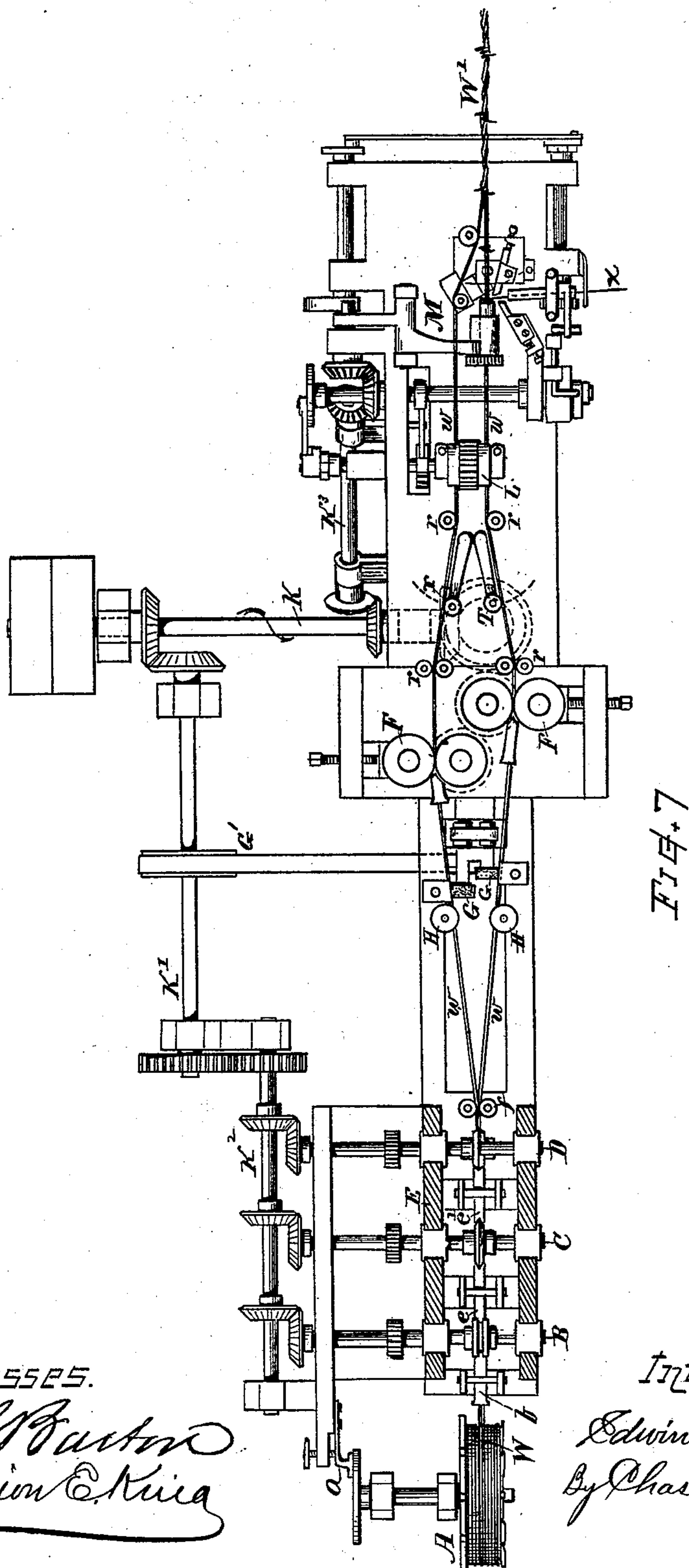
3 Sheets—Sheet 2.

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MACHINE FOR MAKING BARBED WIRE FENCING.

No. 529,036.

Patented Nov. 13, 1894.



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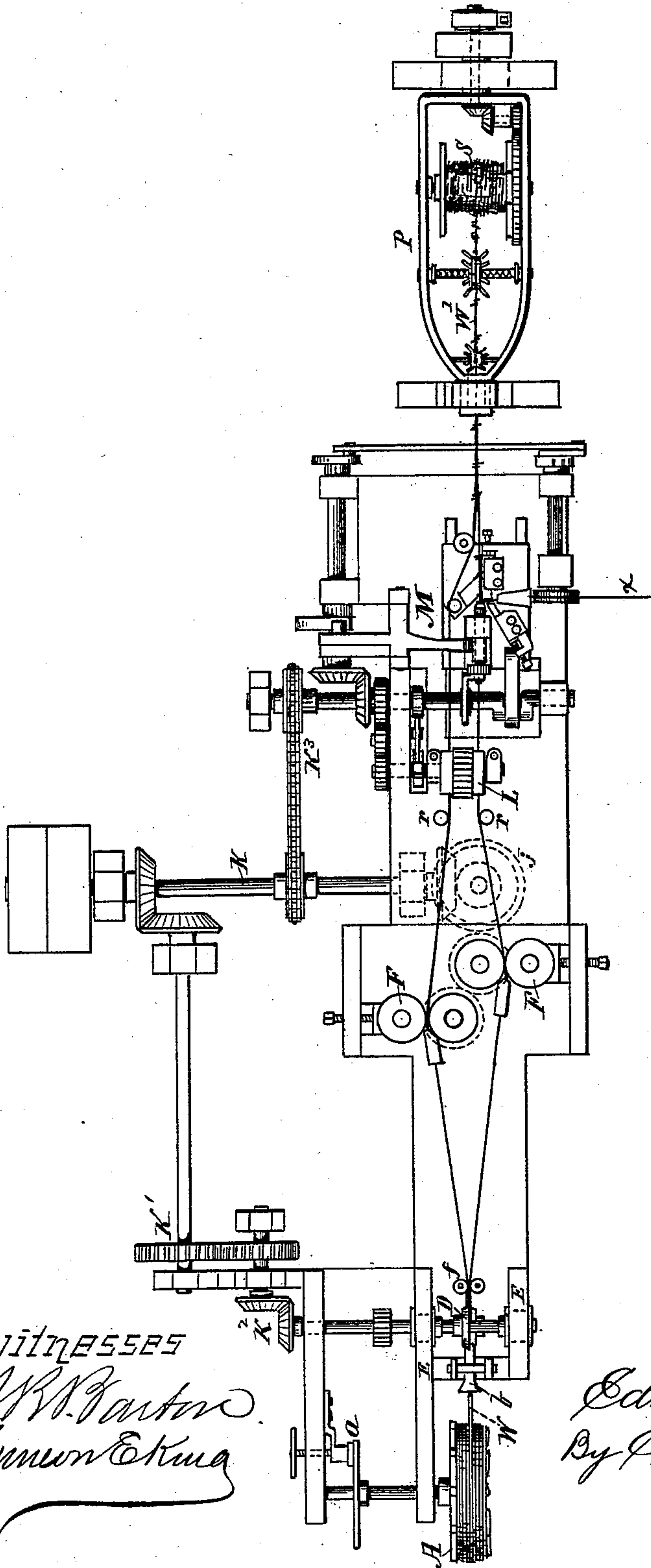
3 Sheets—Sheet 3.

E. S. LENOX.

MACHINE FOR MAKING BARBED WIRE FENCING.

No. 529,036.

Patented Nov. 13, 1894.



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UNITED STATES PATENT OFFICE.

EDWIN S. LENOX, OF WORCESTER, MASSACHUSETTS.

MACHINE FOR MAKING BARBED-WIRE FENCING.

SPECIFICATION forming part of Letters Patent No. 529,036, dated November 13, 1894.

Application filed October 24, 1892. Serial No. 449,892. (No model.)

To all whom it may concern:

Be it known that I, EDWIN S. LENOX, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented new and useful Improvements in the Production of Wire Fencing and Similar Manufactures of Wire, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

The object of my present invention is to provide a method for the production of wire manufactures, such as barbed wire fencing, or twisted fencing of wire strands without barbs, from multiple or dual rolled rods direct, and without requiring the wire to be subjected to the preliminary processes of coating and die-drawing.

Another object is to provide mechanism adapted for working twin or multiple wire- rods into barbed-wire fencing by a system comprising slitting and rounding up mechanism operating in combination with mechanisms for attaching barbs to one or more of the rolled strands of rod as fast as it is delivered from the finishing or rounding up rolls.

Another object is to provide machinery for working dual or multiple wire rods by cold process and continuous order into wire fencing; comprising mechanism for dividing the dual rod into separate strands, in combination with rolls for rounding, shaping or finishing the several strands, and means whereby the strands are reassembled and twisted or worked into the fencing manufacture, as more fully hereinafter set forth. These objects I attain by the method and mechanism substantially as explained in the following description; the particular subject matter claimed being hereinafter definitely specified.

In the drawings, Figure 1 is an elevation view of mechanism illustrating the nature of my invention, some of the parts being shown in section. Fig. 2 is a view on somewhat larger scale, showing the edging shears or fin cutters. Fig. 2^a is a section of dual rod. Fig. 3 is a view showing the scale-breaking rolls. Fig. 4 shows the slitting shears. Fig. 5 shows the burr-removing grinder-wheel with section of a rod-holding guide. Fig. 6 shows the side

and section of the rounding or finishing rolls. Fig. 7 is a plan view of the mechanism as in Fig. 1, and Fig. 8 is a plan view of mechanism somewhat simplified, and also showing the twisting and coiling mechanism, which is omitted on Figs. 1 and 7 by reason of lack of space on the sheet.

My invention for making strand wire fencing direct from rolled rods consists in first rolling the metal into a multiple, dual or twin stranded rod, and passing the same, preferably from a coil, through an organized mechanism adapted for slitting the twin rod into separate strands, rounding or finishing the several strands to wires of the desired shape and size; attaching barbs thereto; twisting the strands together, and coiling the product; this entire operation being conjunctively performed as the material forming the product moves forward through the machine; thereby avoiding the labor and expense involved in the present ordinary practice of cleaning, coating and drawing the common rolled rod to reduce it to wire of the size required for fencing purposes.

The multiple or dual rod is placed on a suitable reel or support, its end led into the machine, and as it is advanced therethrough is divided, rounded and barbed, the strands reassembled, twisted and coiled, the product being delivered from the apparatus as complete manufactured barbed or twisted strand fencing.

The mechanism for carrying out my invention comprises, essentially, means for slitting, severing or separating a dual or multiple rod as it is delivered from a coil of the same; suitable forming rolls or devices for rounding up or imparting to each of the severed strands the final section or shape desired for the finished wire; and suitable machinery for attaching barbs to one or more of the said strands, or forming the product into twisted wire fencing material by direct and continuous process.

With the above named mechanism there can be combined, in instances when the same may be desired, edging shears for removing projecting fins from the sides of the finned ends of the rods; angular edged breaker-rolls for starting off scale from the line of slitting; and grinders or devices for removing or destroying the burr left by the slitting shears

on the severed strands of rod. All or either of these last named devices are omitted in instances where the conditions of working do not require their particular operation to be performed on the rods or wire. I have, however, in the drawings, illustrated machinery embracing all of such devices, as well as a machine in which the said devices are omitted.

Referring to parts, A denotes the coil-supporter preferably consisting of a revoluble reel having a brake or tension regulating device *a* combined therewith.

B indicates edge-trimming shears preferably arranged as in Fig. 2, and adapted to shear off fins or portions that project beyond the normal size of the rods.

C indicates a pair of rolls having angular peripheral edges (see Fig. 3) adapted to press into the grooves or corrugations of the twin rod to loosen or displace scale in advance of the slitting cutters. Presser-screws *c* are provided to set the rolls C together with the required force.

D indicates the shears or rotary cutting disks for slitting, severing or dividing the rod into its several strands along the thin connecting web. Said shearing disks can be made as shown in Fig. 4, and guides *d* are preferably combined therewith to sustain the rods in proper relation thereto as the strands are separated.

The several revoluble shears B and D and rolls C are best mounted in a suitable frame or housings E, in the order shown, with an entering guide *b* and intermediate guides *e e'* arranged in connection therewith to direct and sustain the rod and present it to the several rotating shearing disks and rolls in proper sectional relation and in continuous order.

F F indicate rounding or finishing rolls to which the separate strands are led from the slitting shears D, and by means of which the respective strands are rounded or shaped into wires of the required finished form and size.

Guide-rolls *f* are preferably arranged near the shear D from which the strands are deflected. The finishing rolls F are best arranged in separate pairs or with passes for each strand of rod, and are fitted with grooves of suitable shape and size to give the rod strands the desired sectional size and form. Said rolls are mounted in suitable housings and provided with suitable gearing, as J J', whereby they receive power and motion from a driving shaft K, which parts can be constructed and disposed in any convenient manner for effecting the operation of the various mechanisms in their proper time and order.

K' and K² indicate shafts and gearing for giving motion to the slitting-shears &c., and K³ indicates the connections for driving the barbing apparatus.

When desired I employ a grinding wheel (or wheels) G located at a position between the guides *f* and the finishing rolls F for removing the burr from the sheared edges of the strand before passing it between the fin-

ishing rolls. Said grinders can be operated by any suitable arrangement of pulleys and belts G' from a convenient part of the machinery.

H indicates a deeply grooved sheave mounted on an adjustable support and disposed adjacent to the devices for guiding the rod strand at the proper position. A screw and hand-nut H', or equivalent means, is provided for raising and lowering the guiding sheave as required. A supporting guide I is best employed at the position where the strand passes the grinding wheel, as shown in Fig. 5, to prevent the strand from springing away from the grinder. These grinding-wheels and guides are made the subject-matter of claims in a separate application for Letters Patent.

M indicates the mechanism for attaching barbs to the wire, or forming the strands into fence manufacture. Said barb-attaching mechanism can be of any well known suitable construction, or such as heretofore employed for making barbed-twisted strand fencing from drawn wire; and as the particular construction of the barb-attaching devices is not a feature of my present invention it is not herein described in detail. The formed strands *w* are advanced to the fence machinery by feed-rolls L, one strand passing through the barb-fixing dies and the other passing around said dies to be reassembled and twisted together with the barbed strand by the rotation of the twister frame or coiling reel mechanism which carries the spool S and operates in well known manner. The barbing strand *x* is fed in at the sides of the machine, twined about the strand *w* and cut off in the well known manner. By omitting the strand *x* twisted strand fencing without barbs is formed.

r r indicate guide sheaves for directing the wires to the feed-rolls L of the fence-machine as it is delivered from the reducing rolls; the severed strands being reassembled and made into twisted-strand fencing (with or without barbs) and coiled or spooled as fast as the wires are formed by said rounding rolls.

T T indicate yielding take-up devices for keeping the wires taut, or avoiding any loss of tension on the wires in cases where the wire is intermittently taken up by the barb-attaching mechanism. Said take-up preferably consists of swinging arms supported on rocker shafts *t'* having lever connections with a spring *t* (or springs) whereby yielding pressure is exerted tending to swing the take-up arm and wire-strand more or less to one side when slackness occurs and thus maintain even tension on the wires.

The operation is as follows: The multiple or dual rod W is passed through the entering guide *d* to the edging shears B which take off the protruding parts, then through guides *e* to the rolls C, the sharp angular edges of which press along the connecting web *w'* and start off the hard scale. The rod then runs

through the guide e' to the slitting shears D which divide it into separate strands w that are severally carried past the burr-removing devices if used, and the sharp edge or burr is thereby taken off, then passed between the respective rounding rolls F which impart thereto the required finished size and form, and from thence the strands are carried through the fence-making machinery M and barbed, then twisted together and coiled upon the winder or spool S, the whole operation being conjunctively performed and the fencing W' produced by continuous process and directly from the multiple or dual rolled rod.

In Fig. 8 the machine is shown with the slitting-shears, guiding devices, rounding rolls and fence-forming appliances; the edging shears, breaker rolls and burr-removing devices being omitted. The barb-attaching mechanism is also arranged on a reciprocating bed, which construction accommodates, by movement of the dies, the dwell for applying the barb, so that the wire can be fed forward with a constant uniform motion. This style of machine is adapted for general classes of work; but if roughness of the wire is objectionable, as for instance in some twisted strand fencing, then the edging shears and burr-removing devices may be employed.

I do not claim in a wire fencing machine, broadly, the combination of mechanism for separating a wire rod, or a longitudinally ribbed rod, into a plurality of members, with mechanism for advancing said separated members through the machine to the fence-forming devices, and mechanism connecting and timing the same whereby the separated members of the rod may be continuously worked into finished fencing.

I claim as my invention herein, to be secured by Letters Patent—

1. A machine for making barbed fencing from multiple or dual wire-rods organized for continuous operation, substantially as described and comprising, in combination, a slitting shear that separates the strands of the rod, forming rolls that round or shape the several strands to the required finished form and size of wire, a barbing mechanism adapted for attaching barbs to the wire, and means substantially as described for twisting the strands and coiling the product, as set forth.

2. In a machine for making barbed-wire fencing from multiple or dual rolled rods, the combination of means for supporting and de-

livering said rod, rotary cutters that divide the rod into separate strands, grinding wheels for removing the burr, a plurality of sets of forming rolls that separately round or shape the individual strands into wire of the desired size for fencing purposes, a barb-attaching mechanism, attaching guides, and feed-rolls that carry the strands from the forming-rolls to said barb-attaching mechanism, substantially as set forth.

3. In a machine for making twisted and barbed wire fencing direct from dual or multiple rolled rods, the combination, substantially as described, of the delivery reel, the entering guide, a slitting shear, a set of rolls for rounding the separated strands of wire, the barb-attaching mechanism, feed-appliances that support and advance the wires between the rounding-rolls and barb-attaching mechanism, a twisting and winding reel whereby the finished strands are re-assembled and twisted together, and means for simultaneously imparting power and motion to operate the shear, the rolls, the barb-attaching mechanism and the feed-appliances, substantially as set forth.

4. In a mechanism for making twisted strand wire fencing direct from dual or multiple rolled rods, the combination of a slitting shear, a set of rounding rolls, and a twisting and winding reel, whereby the rounded or finished strands of wire are re-assembled and twisted together, for the purpose set forth.

5. In a mechanism for making twisted strand wire fencing direct from dual or multiple rolled rods, the combination, substantially as described, of a slitting shear, a set of rounding rolls, guides that introduce the rod in proper relation into said shear and the separated strands of rod into the respective roll-passes, and a twister and winding-reel whereby the rounded or finished strands are re-assembled and twisted together, for the purpose set forth.

6. The combination, with the slitting-shears, the reducing-rolls and the fence-wire-barbing machinery, of the yielding take-up between the reducing rolls and barbing mechanism, substantially as and for the purpose set forth.

Witness my hand this 10th day of October, A. D. 1892.

EDWIN S. LENOX.

Witnesses:

CHAS. H. BURLEIGH,
ELLA P. BLENUS.