

(No Model.)

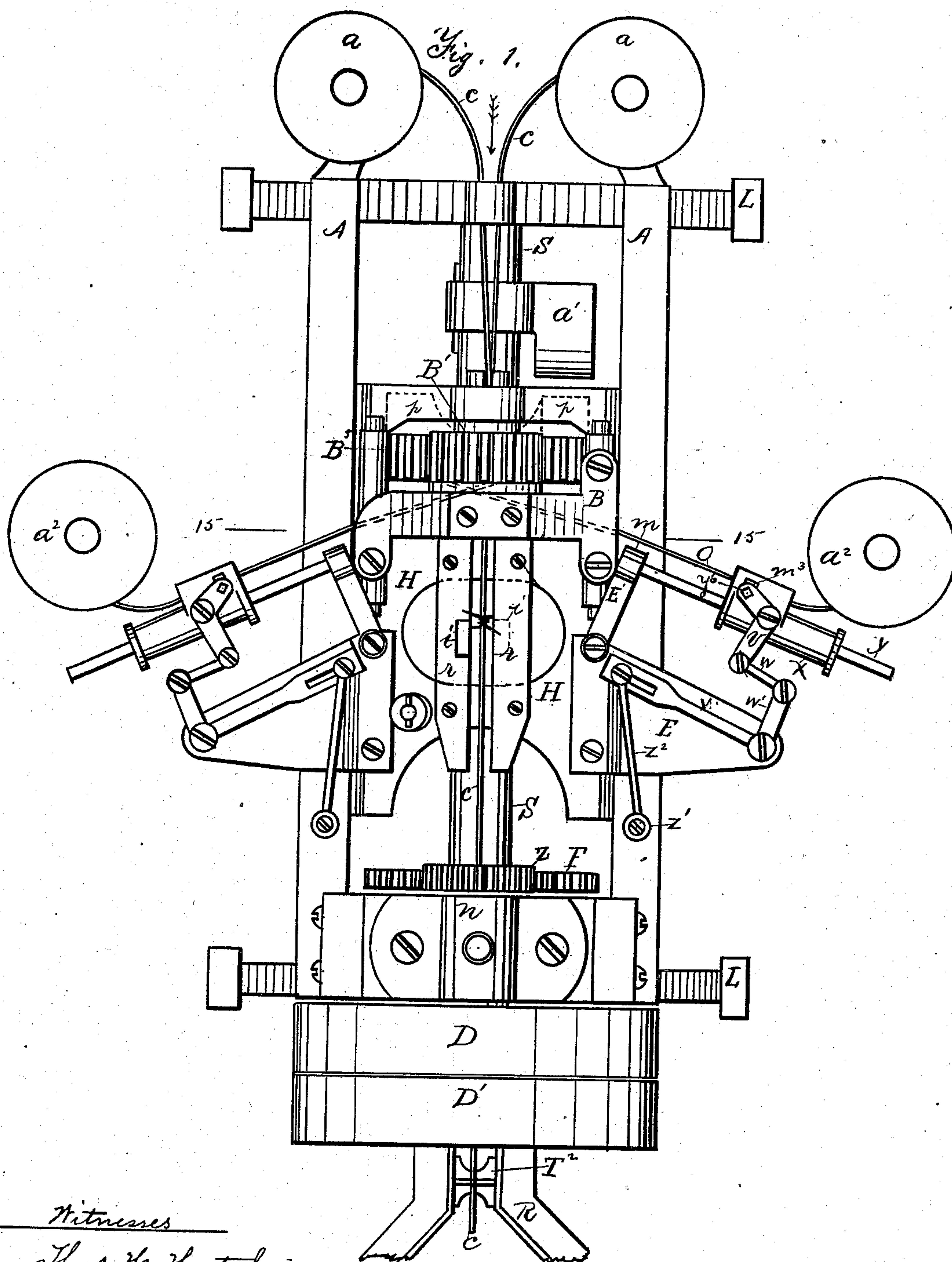
3 Sheets—Sheet 1.

D. G. WELLS.

MACHINE FOR BARBING WIRE.

No. 249,493.

Patented Nov. 15, 1881.



Witnesses

Thos H. Hutchins

Wm J Hutchins

Inventor

David G. Wells

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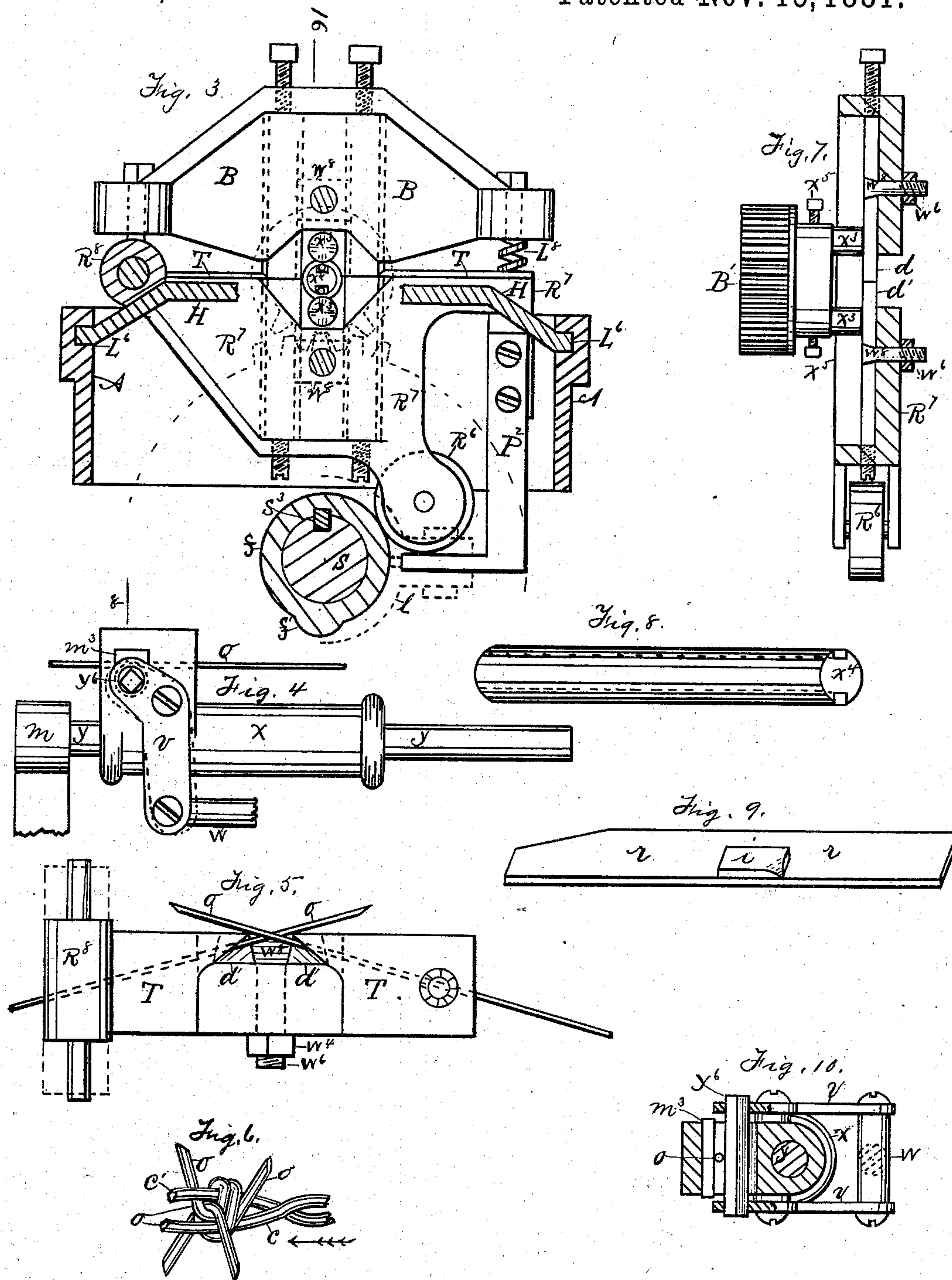
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UNITED STATES PATENT OFFICE.

DAVID G. WELLS, OF JOLIET, ILLINOIS.

MACHINE FOR BARBING WIRE.

SPECIFICATION forming part of Letters Patent No. 249,493, dated November 15, 1881.

Application filed July 15, 1881. (No model.)

To all whom it may concern:

Be it known that I, DAVID G. WELLS, of the city of Joliet, in Will county, and State of Illinois, have invented certain Improvements in Machines for Forming Wire Barbs on Fence-Wires, the construction and operation of which I will proceed to explain, reference being had to the annexed drawings, and the letters and figures thereon, in which—

10 Figure 1 is a plan view on the top; Fig. 2, a central longitudinal vertical sectional view; Fig. 3, a vertical cross-sectional view on the line 15, Fig. 1; Fig. 4, a plan view on the top of the feed that feeds the barb-wire into the machine; Fig. 5, a plan view on the top of the lower hinged die-frame; Fig. 6, a perspective view of a finished barb, the product of the machine; Fig. 7, a vertical sectional view on the line 16, Fig. 3; Fig. 8, a perspective view of the grooved rod x^4 , through the grooves of which the wire strands c pass into the coiling-pins x^3 ; Fig. 9, a perspective view of the guide-plates r and stop i , and Fig. 10 a cross-sectional view of the feed on the line 8, Fig. 4.

25 The nature and object of this invention are to form wire barbs, such as are shown in Fig. 6, on the fence-wires c at convenient intervals by their being intertwined and coiled around the two strands c , to form four points, as shown in said Fig. 6, for fence purposes. In order to perform this the entire operation of feeding in the barb-wires c , coiling them on the strands, cutting them off, and returning the parts to the starting-position is accomplished at one revolution of the shaft S. One revolution of the shaft S rotates the wheel B^5 half-way around, because the cam g^3 will return the carriage H, so the cams a' and p will disengage from each other and only rotate the wheel half-way around, leaving the opposite cam, p , to be engaged by the cam a' at its next revolution, so the cams a' and p engage with each other alternately. The wheel B^5 has three times the circumference of the wheel B' , and when it rotates half-way around rotates the wheel B' once and one-half time to coil the barb that many times around the strands c .

In the drawings, A is the main frame of the machine, and is supported by suitable legs L. The frame A is rectangular in shape and bears

the working parts of the machinery, and is provided on its lower side extending its entire length with the main driving-shaft S, and immediately above it with the reciprocating carriage H, which travels back and forth in the ways L^6 , (shown more particularly in Fig. 3.)

Motion is imparted to the machine by a belt on the pulley D, on the hollow shaft of the twister-frame R, which has attached on its inner end the pinion z , from which the larger pinion F and the shaft S, to which it is firmly keyed, receive motion. About central on the shaft S is the cam-wheel g^3 , firmly keyed to it, which cam g^3 rotates between the friction-rollers i^2 on the lower end of the arm H^8 , which arm H^8 is permanently fixed to the reciprocating carriage H above it, as shown in Fig. 2, so that when the cam g^3 rotates it reciprocates the carriage H. The shaft S is also provided with the sleeve f , which reciprocates with the carriage H by being boxed to it by the arm P^2 and boxing l , Fig. 3, and also rotates with said shaft S on account of being feathered to it by the spline S^3 . The upper end of the sleeve f bears the pinion B^5 , which rotates loosely and intermittently on it, and rotates intermittently the smaller pinion B' above it, provided on its front face with a pair of projecting coiling-pins, x^3 , to coil the barb-wire. The extreme upper end of the shaft S is provided with the cam a' , firmly keyed to it, so as to rotate with it. When the shaft S rotates the cam g^3 will move the carriage H toward the cam a' until it engages with one of the projecting lugs p on the side of the wheel B^5 , and rotates it half-way around when the two cams a' and p disengage by means of the cam g^3 , returning the carriage H to its starting-point. When it returns again it engages with the opposite lug, p , performing a like operation, so that each time the carriage H reciprocates the wheel B^5 is rotated half-way around, and in turn rotates the coiling-pin B' once and one-half time around, as before stated. The coiling-pin B' rotates on the hollow shaft e^4 , held firmly in the boxing e^3 , through which the wire-strands c are guided in the two opposite grooves of a long rod, x^4 , inclosed within the hollow shaft e^4 , (shown more particularly in Figs. 3 and 8,) so the wire-strands c will pass through it par-

allel with each other, without getting tangled or twisted at that point. Fig. 8 shows the grooved guide-rod x^4 perspectively and in detail. The two coiling-pins x^3 on the face of the coiling-pinion B' are set exactly opposite each other, and are held in place by the set-screws x^5 , which coiling-pins are the twisters that coil the barbing-wire o around the wire-strands c , and are shown particularly in Figs. 2, 3, and 7. The barbing-wire o is fed into the machine from either side off the spools a^2 , just at that point, so as to pass between the two strands c and between the two coiling-pins x^3 through a throat under the plates T, in the position shown in Fig. 5, so they will lie between the cutting-dies d and d' . When the barbing-wires o are in the shape shown in Fig. 5, the carriage H moves as aforesaid until the cam a' engages with one of the lugs p on the pinion B', causing it to rotate the coiling-pinion B', so the coiling-pins x^3 will catch the ends of the barbing-wire o , and coil them around the strands c , in the shape shown in Fig. 6. At this instant the cam a' and lug p disengage, causing rotation of the coiling-pinion B' to cease, when the cutting-dies d' , which are firmly set in the frame R', hinged at one end by the hinge R⁸ in the side of the carriage H, are forced upward by means of the lug f' on the sleeve f rolling against the friction-roller R⁶ in the lower end of the frame R', causing the frame R' to rise with the lower dies, d' , so the barb-wire o will be sheared off diagonally between the upper dies, d , and the lower dies, d' , after which the barb passes on and the carriage returns to perform another like operation.

The upper cutting-dies, d , are held firmly in the frame B, which is supported at either end to the carriage H, to which it is firmly bolted. The spiral spring L⁸ is for the purpose of holding down that end of the die-frame R', so the roller R⁶ will roll on the sleeve f continuously. By this method the strand-wires c travel continuously through the machine in the direction indicated by the dotted lines and arrow, and the barbing part of the machine travels with it to put on the barbs.

After the barbs are formed on the wires c as aforesaid, they need to be straightened up, so the points will stand at right angles, or nearly so, with the strand-wires c . This is accomplished by the long guide-plates r on the top of the carriage H, and the stops i attached to them. These guide-plates r are just far enough apart so the barb can draw through between them, as shown in Fig. 1. When the barb comes along its legs or prongs come against these stops i , they are arrested in their progress until they are bent at right angles with the strand-wires c , after which they slip over the stop i by being drawn up an incline left on the corner of the stop. (Shown particularly in Fig. 9.) These stops i are placed on the plates r , so one is above and one below as one leg or prong of the barb is above and one below the plates r as it passes along. Fig. 9 is a perspective view of a plate, r , having a stop, i ,

and showing the corner of the stop inclined so the barb can be drawn over it as aforesaid.

The mechanism for feeding the barbing-wire o into the machine is shown particularly in Figs. 1, 4, and 10, and consists of the link z^2 and w , bell-crank $v w'$, lever V, sleeve x , rod y , bolt y^6 , and beam E'. The link z^2 is pivoted to the top of the main frame A at z^2 , while the elbow of the bell-crank $v w'$ is pivoted to the top of the outer end of the plate E, which plate E is bolted at its inner end to the top of the carriage H, as shown in Fig. 1, and reciprocates with it. The link z^2 is attached to the inner end of the long arm of the bell-crank $v w'$, so that when the carriage H reciprocates it holds that end of the bell-crank stationary, causing it to reciprocate the sleeve x on the rod y back and forth. The barbing-wire o passes off the reels a^2 through a throat on the side of the sleeve x , as shown in Figs. 1, 4, and 10, between the square rod or die y^6 and a die at m^3 . When the sleeve x moves toward the machine the wire o is caught between the square die y^6 and the die m^3 and carried forward as far as the sleeve x moves. When the sleeve x returns the wire o is relieved from pressure and remains stationary to be caught and carried forward on the return of the sleeve x , as stated, thus placing the barbing-wires o in the machine in the position shown in Fig. 5, crossing each other between the two wire-strands c at the instant the coiling-pins x^3 are in position to revolve and coil them about the strands c , to form the barb as stated.

The plates T, Fig. 5, lie on the top of the die-frame R', and are provided with a throat between them and the frame, through which the barb-wires are forced by the feed, to hold them in place and conduct them in right position between the strands c . By this feed described the barb-wires o are fed into the machine from either side off the spools a^2 simultaneously, as needed.

In order to hold the cutting-dies d and d' in place in their respective frames the bolts w^6 , having the wedge-shaped heads w^8 , are used, the wedge-shaped heads w^8 wedging the dies against the frames they set in, to hold them firm, as shown particularly in Fig. 5. The nut w^4 on the end of the bolt w^6 is for the purpose of drawing the wedge-head of the bolt up firmly between the dies, as stated.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows, to wit:

1. In a machine for barbing wire, the combination and arrangement of the frame A, shaft S, pinions F and z , cam g^3 , sleeve f , pinion B', cam a' , lugs p , pinion B', coiling-pins x^3 , cutting-dies d and d' , die-frame B, hinged die-frame R', plates r , stops i , arms H⁸ and P², friction-roller R⁶, lug f' , spring L⁸, and boxing l , all arranged to operate in the manner and for the purpose set forth.

2. In a wire-barbing machine, the combination and arrangement of the reciprocating carriage H, die-frame B, hinged die-frame R',

plates T, having guide-grooves, and bolts w^6 , having the wedge-shaped head w^8 , holding in the cutting-dies d and d' , all to operate in the manner and for the purpose set forth.

5 3. In a machine for barbing wire, the combination of the plates r , having the straightening-stops i , with the carriage H, for the purpose of straightening the points of the barbs in the manner set forth.

10 4. In a wire-barbing machine, the combination of the carriage H, stationary die-frame B, carrying the stationary dies d , hinged frame R^7 , carrying the cutting-dies d' , cam f' , and friction-roller R^6 , and to operate the lower cutting-

dies, d' , in the manner substantially as set forth. 15

5. In a wire-barbing machine, the combination and arrangement of the frame A, carriage H, plate E, attached to the carriage H, link z^2 , bell-crank v w' , link w , crank V, sleeve x , rod 20 y , bolt y^6 , die m^3 , and arm E' , for the purpose of feeding the barb-wire o into the machine in the manner substantially as described.

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Witnesses:

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