

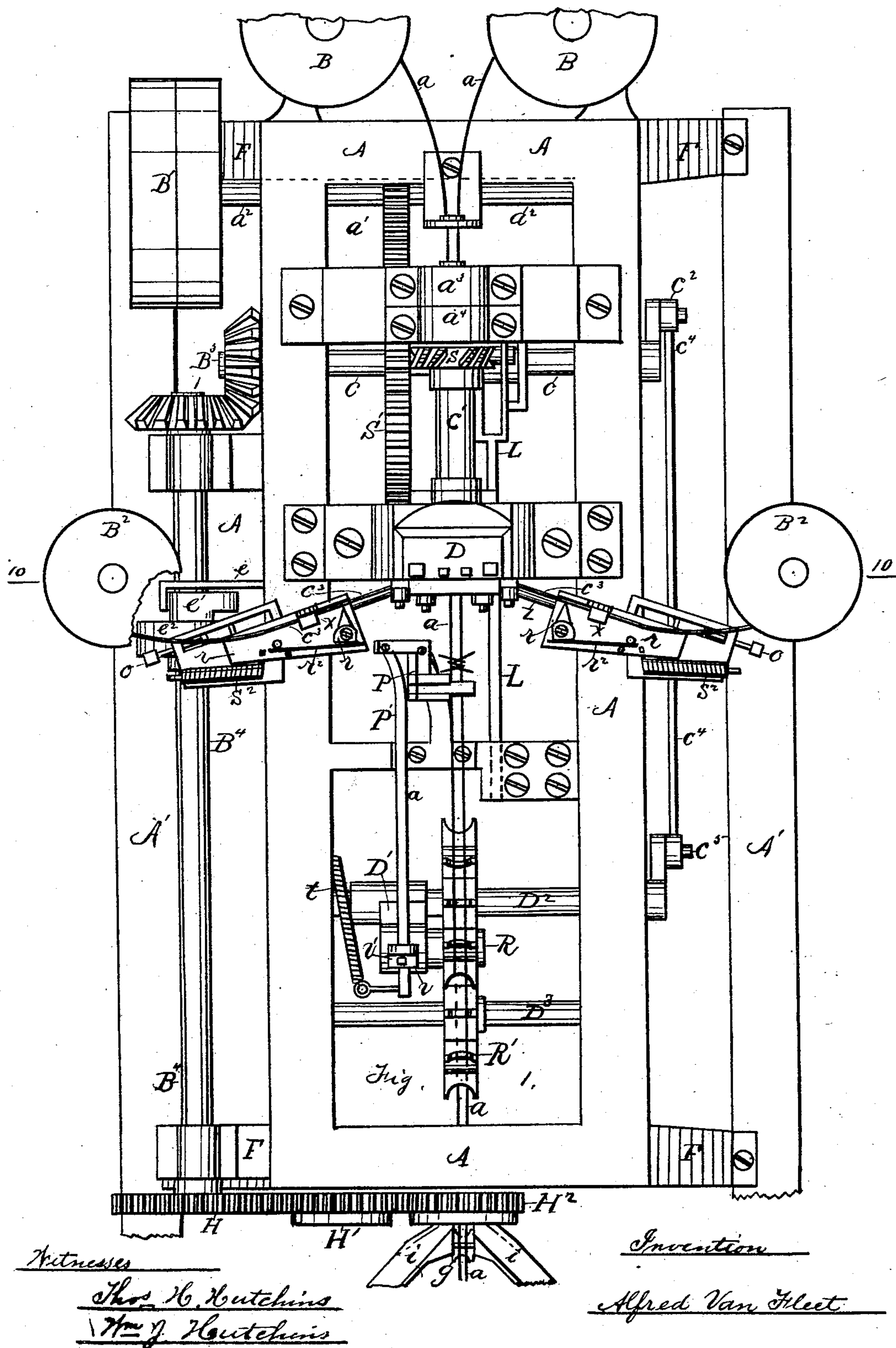
(No Model.)

4 Sheets—Sheet 1.

A. VAN FLEET.
BARBING MACHINE.

No. 248,264.

Patented Oct. 11, 1881.



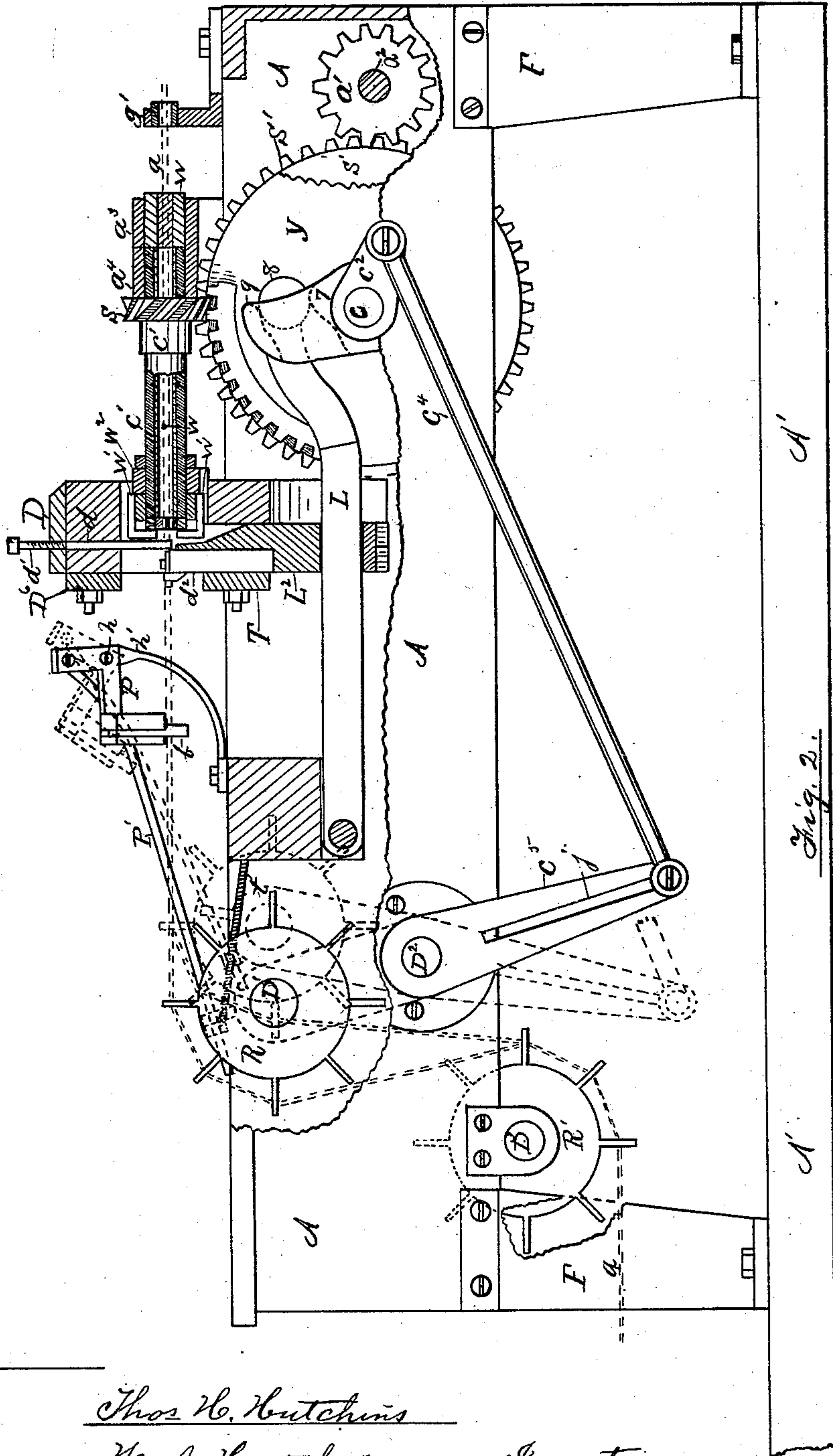
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Witnesses

Thos H. Hutchins

Wm J. Hutchins

Inventor

Alfred Van Fleet

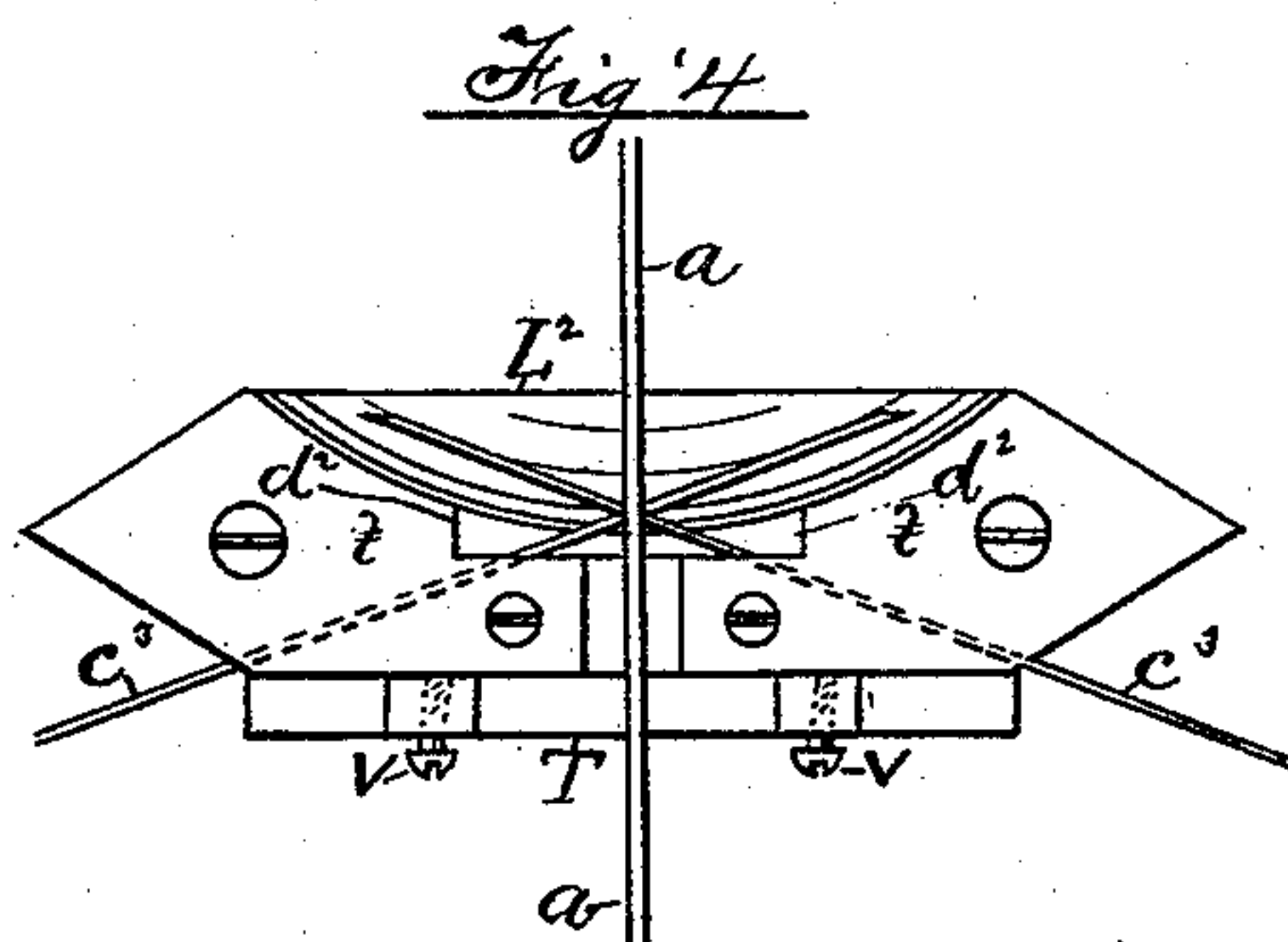
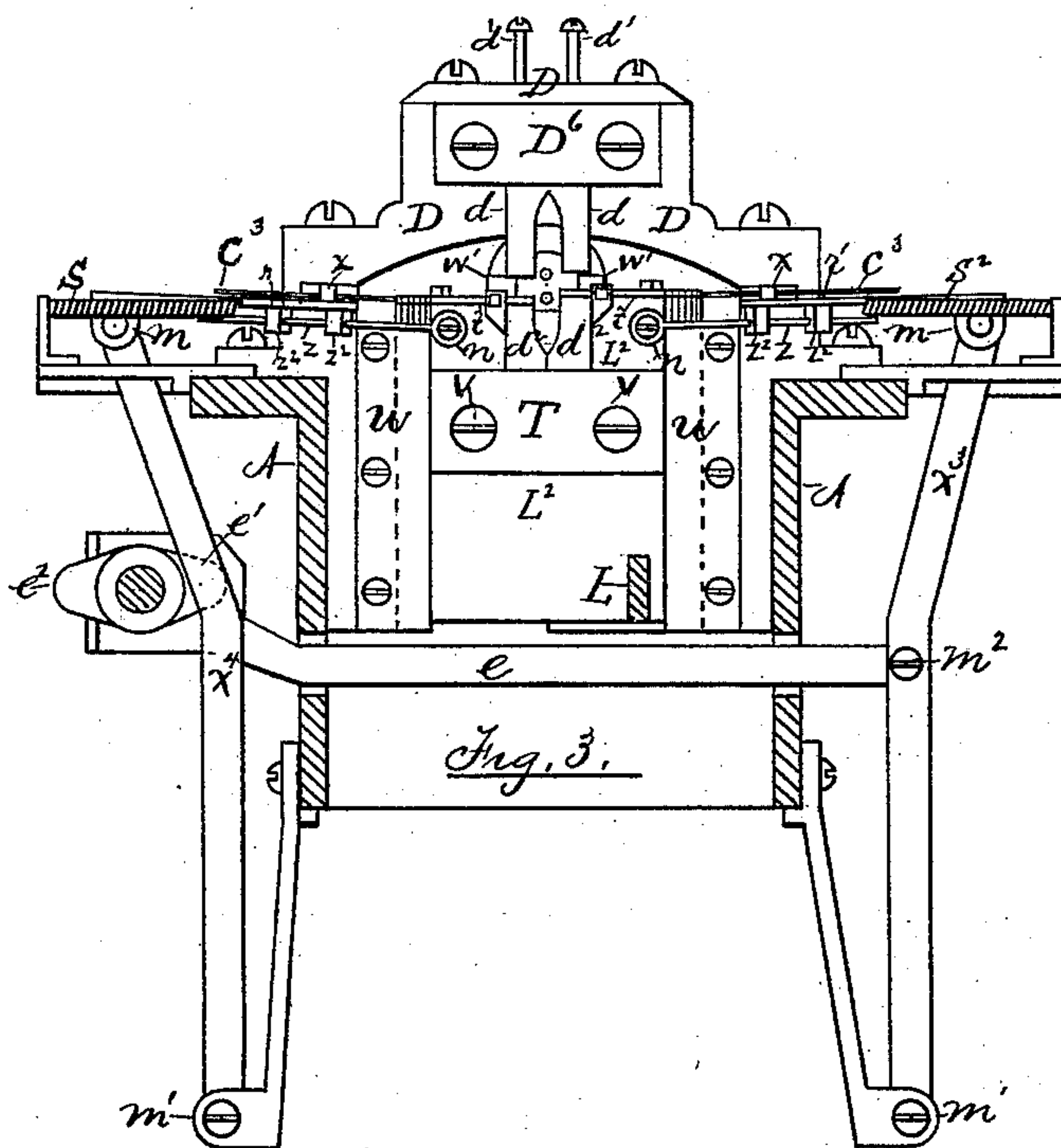
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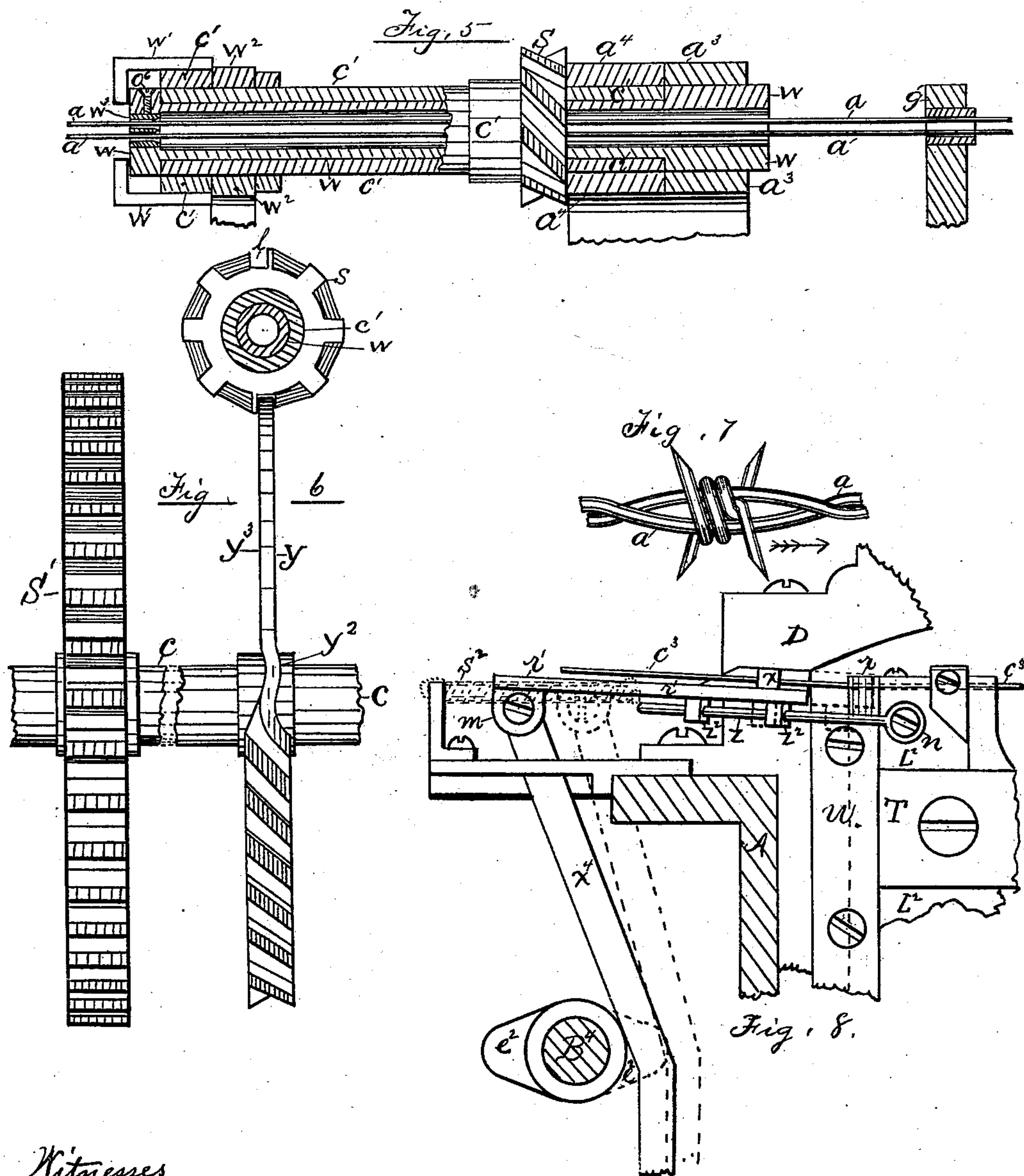
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UNITED STATES PATENT OFFICE.

ALFRED VAN FLEET, OF JOLIET, ILLINOIS, ASSIGNOR TO HIMSELF AND
ANDREW H. SHREFFLER, OF SAME PLACE.

BARBING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 248,264, dated October 11, 1881.

Application filed July 8, 1881. (No model.)

To all whom it may concern:

Be it known that I, ALFRED VAN FLEET, of the city of Joliet, in Will county, and State of Illinois, have invented certain Improvements in Machines for Barbing Wire for Fences, 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; Fig. 2, a side elevation with a portion cut away; Fig. 3, a vertical sectional view on the line 10, Fig. 1, looking toward the upper end of the machine; Fig. 4, a plan view on the top of the vertical sliding head L^2 ; Fig. 5, a longitudinal sectional view of the barb-twister; Fig. 6, a front elevation of the screw-gear to drive the barb-twister intermittently; Fig. 7, a perspective view of a finished barb on the fence-wires, being the product of the machine, the arrow showing the direction it went through the machine; and Fig. 8, a side elevation of one of the feeds for feeding the barbing-wire into the machine.

25 This invention relates to that class of machines commonly called "barbing-machines," for forming barbs on fence-wire for fencing purposes, and is of that class that forms the barbs of two pieces of wire fed simultaneously in between two strands of fence-wire, and the two ends twisted around the two strands of fence-wire to hold them on, and then cut loose from the remainder of the barbing-wire diagonally, leaving four sharp points to the finished barb, as shown in Fig. 7.

35 In the drawings A' is the bed-frame, on which the frame A of the machine is supported by the legs F , bolted firmly down on the bed plate or frame. The frame A bears that portion of the machinery that places the barbs on the fence-wires a , and the lower end of the bed-frame A' , Fig. 1, supports the twister to twist the two strands a of the fence-wire together after the barb is formed on it, and the reel to wind up the finished barbed wire.

45 The general construction of the machine is shown in Figs. 1 and 2. The power to propel the machine is derived from a belt on the pulley B' on the shaft a^2 . About central on the shaft a^2 is located the pinion a' , which drives

the main cog-wheel S' on the shaft c . The shaft 50 c also bears about central on it the large partially-toothed screw-wheel y . (Shown more particularly in Figs. 2 and 6.) The wheel y is for the purpose of rotating the screw-gear wheel S immediately above it in an intermittent rotary manner. The periphery of the wheel y 55 is plain and without cogs or teeth, except to the number of twelve, which are set in the diagonal manner across its periphery, as shown in Fig. 6, to correspond with the teeth similarly arranged on the periphery of the wheel 60 S to the number of eight, as shown in said figure. When the wheel y revolves once the wheel S is revolved one and one-half time around to cause the twister to twist the barbs 65 that number of times around the fence-wires a . The wheel S has the two slots l across its periphery exactly opposite each other, as shown in Fig. 6, into which the plain portion of the periphery of the wheel y travels after the cogs 70 on it have passed the wheel S , and until its rotation causes the cogs to again engage with the screw-wheel S , when it revolves the screw-wheel S one and one-half time around, as before stated, so that while the wheel y rotates 75 continuously the wheel S only rotates intermittently, for the purpose hereinafter described.

The screw-wheel S is firmly keyed to the hollow shaft c' , which it rotates in the boxing w^2 and a^4 at either end. The hollow shaft c' is 80 provided with and is sleeved onto the hollow stationary rod or barrel w , which is held stationary by the boxing a^3 at its rear end, while the other end projects through a little beyond the hollow shaft c , through which it passes, 85 terminating with a diameter about equal to that of the hollow shaft c' , to give it strength and greater face for the barbs to rest against as they are twisted about the strands a , as it is just at this point that the twisting of the barbs 90 about the strands of wire a is done. The inner end of the stationary hollow shaft w is closed by the guide-plug w^3 , held in place by the set-screw o^6 , through which guide-plug w^3 are two holes to permit the two wires a to pass, as is 95 shown in Figs. 2 and 6, one immediately above the other, and far enough apart to permit the barbing-wire c^3 to pass between them and cross

each other, as shown in Fig. 4. The inner end of the revolving hollow shaft c' is provided with two lugs, w' , forming an elbow over the end of the stationary shaft w , and exactly opposite each other, and which as they revolve with the shaft c' , to which they are attached, catch the two ends of the barb-wires c^3 forming the barb, and bend them once and one-half time around the two strands a of the fence-wire, as the screw-wheel S is rotated that many times each barb is formed, and at each such revolution a barb is formed on the wires a .

The fence-wires a pass into the machine off the reels B, and the wires c^3 for forming the barbs pass into the machine from each side simultaneously off the reels B², Fig. 1.

g' is a guide to conduct the fence-wires a straight into the rear end of the hollow rod or barrel w on its way through the machine, and its general course is indicated by the dotted lines in Fig. 2. The vertical sliding head L² (shown in Figs. 2 and 3) carries a set of vertical cutting-dies, d^2 d^2 , held in proper position by the face-plate T, and receives its vertical reciprocating motion from the lever L, operated by the cam 7 on the shaft c . The lever L passes through the sliding head L² to carry it, as is shown in Fig. 3, and has its end engaging with the cam 7, provided with the friction-roller 8 to roll on the cam 7 to cause less friction. The lip 9 above the cam 7 is for the purpose of bringing down that end of the lever L to make it prompt in its action.

The upper cutting-dies, d d , are arranged in the bridge D, immediately above the lower cutting-dies, d^2 d^2 , in such manner as to form shears to cut the barbing-wire c^3 off diagonally at the proper time after it has been formed about the strands a , as aforesaid, and are held in place by the face-plate D⁶, and regulated up or down by the set-screws d' .

The barbing-wires c^3 are fed into the machine intermittently and simultaneously from either side of the machine off the reels B². Figs. 1 and 3 show the barbing-wires c^3 passing off the reels B², along over the reciprocating plates r' , through a throat in the guide-post x , between it and the turned-up back of the plate r' and the dog r , which permits it to slide forward, but not backward, on into the machine through the throat under the plates f f on the upper end of the sliding head L², as shown in Fig. 4, until they pass and cross each other, as shown in said Fig. 4, between the strands of the wire a . Fig. 4 shows the position of the two barbing-wires c^3 as they are when ready to have their outer ends caught by the revolving twisters w' and twisted around the strands, as before stated. The barbing-wire c^3 is cut off diagonally between the ends of the dies d and d^2 just at the point where they emerge from the throat under the plates f . These plates f hold the barbing-wire firmly in the throat under them, so the dies can cut the wires off just at that point. v v are set-screws for the purpose of holding the plates f just at the right place for that pur-

pose. When the barbing-wire is so cut off and the barb finished and the barb is about to be removed by the fence-wires a being pulled along through the machine to the place it is desired to place on another barb, it is necessary to disengage the twisters w' from the barb by turning them backward a trifle. This is accomplished by the curve y^2 on the periphery of the wheel y . (Shown in Fig. 6.) When the curve y^2 passes through the slot l in the wheel S it causes the wheel S to turn backward just a trifle to disengage the twisters w' from the barb, so it can pass out, as stated.

For the purpose of giving the reciprocating motion to the feed-plates r' , they are arranged to slide on the rod z , Fig. 3, underneath them, through the lugs z^2 , attached to their lower surface. The rods z are hinged at their inner ends to the surface of the reciprocating head L², and take its motion up and down, while their outer ends are free. The outer end of the plates r' attach to the upper end of the upright levers x^3 and x^4 , respectively, as is shown in Fig. 3. These levers x^3 and x^4 receive their reciprocating motion from the double cam e' and e^2 , Fig. 3, at the side of the machine, which cam, as it rotates, operates the levers x^3 and x^4 simultaneously to and from each other from side to side of the machine, thus feeding the barbing-wire c^3 into the machine from both sides at the same time and in the same manner. The coil-spring S² serves to bring the feed back before the wire is cut, and the cams e' and e^2 roll out of the way.

In order to dispense with a cam at each side of the machine, the lever e is used to connect the cam with the lever on the opposite side of the machine, as shown in Fig. 3. As the feeds at either side of the machine are exactly alike, only one is lettered, and the description for one answers for both.

The cams e^2 and e' are arranged opposite to each other on the shaft B⁴, as shown in Fig. 1. As the shaft B⁴ rotates it causes the cam e^2 to roll against the upright lever x^4 and throw its upper end forward, as shown by the dotted lines in Fig. 8, to carry the feed-plate r' , to which it is pivoted at m , forward, and is returned by means of the coil-spring S², connecting the feed-plate r' to the side of the main frame A, as shown in Fig. 3. The opposite upright lever, x^3 , is operated in precisely the same manner by means of the cross-lever e and its boxing inclosing the cam e' . The cams e' and e^2 , being opposite to each other, reciprocate the upper ends of the two levers x^3 and x^4 to and from each other simultaneously to feed the barb-wire c^3 from both sides of the machine at the same instant. These upright levers x^3 and x^4 are pivoted at their lower ends at m' to the foot of the main frame A to permit such reciprocation.

When the wires a pass through the machine it is necessary that the part of the said wire where the barb is to be placed on should remain stationary for an instant until the barb-

twister w' can twist them around the wires a , as stated, and until the dies d and d^2 can cut off the barbing-wire to separate it from the finished barb. To accomplish this the machine is provided with the oscillating sprocket-wheel R, arranged directly opposite in line and in the rear of the barb-twister described, about central on the shaft D^2 on the crank D' . This oscillating sprocket-wheel R receives its rocking or oscillating motion by means of the slotted crank c^5 on the outer end of the shaft D^2 , being connected with the crank c^2 on the outer end of the shaft c by the pitman c^4 . It will be readily seen that as the shaft c rotates it will give the crank c^5 an oscillating motion, as it is somewhat longer than the crank c^2 , thus causing the sprocket-wheel R, over which the barbed wires a pass, to move forward toward the barbing central part of the machine, as indicated by the dotted lines in Fig. 2, just at the time the barb-twister puts the barb on the wires a , as before stated, causing a slack between the barb-twister and the lower sprocket-wheel, R' , in the wires a . This permits the wires a to remain stationary at the barb-twister just as long as the sprocket-wheel R is moving toward the barb-twister, as shown by the dotted lines, and just long enough to permit the twister w' to twist the barb on the wire. That being accomplished, the reciprocating sliding head L^2 is elevated by the lever L, and causes the dies d^2 to cut off the barbing-wire c^3 , as before stated, while the cranks c^2 c^5 and pitman c^4 oscillate the sprocket-wheel R backward to the position shown in Fig. 2, far enough to have pulled the wire a along to the place it is desired to put on another barb, and so on until the whole length of the wire is provided with barbs. It will be seen that by this arrangement the barbing part of the machine does not travel with the wire a as the barb is being placed on it, as is the case with most, if not all, other similar machines, thus saving an immense amount of wear and tear to the machinery by dispensing with the movement of the heaviest part of the machine back and forth to barb the wire.

The distance between the barbs is determined by regulating the reciprocation of the sprocket-wheel R. This is accomplished by means of the slot j in the crank c^5 . As the wrist of the pitman c^4 is set in or out along in the slot j the reciprocation of the sprocket-wheel R will be greater or less, causing it to draw the wires a through a greater or less distance, as desired.

The length of the barb is regulated by means of the set-screw o at the rear of the reciprocating feed-plate r' . (Shown in Fig. 1.) By means of turning it in or out the feed is reciprocated as much or little as desired, to feed in as much or little barbing-wire c^3 as is desired to make the barbs any length. Sometimes the barbs, after they are placed on the wires a , will not stand with their points at right angles with the wires a , but will point in all directions. To regulate this defect the barb-straightener P is

used. (Shown at Figs. 1 and 2, but more clearly in Fig. 2.) This barb-straightener P consists of an elbow, pivoted at h to the standard h' , and connected at its upper end by the pitman P' to the crank D' on the shaft D^2 , from which it receives its oscillating motion. (Indicated by the dotted lines in Fig. 2.) The lower end of the barb-straightener P terminates in a crotch, b , which, when down, as shown in Fig. 2, strides the wire just in front of a barb as it leaves the barb-twister, and against which the barb strikes as it reaches it, as shown in Fig. 1, so as to straighten up the points, as stated. The parts are so adjusted that just as the barb has been forced against the crotch b , and has been straightened up to bring its points at right angles with the wires a , as near as may be, the straightener rises up to let it pass on, as shown by the dotted lines in Fig. 2, being assisted to rise by the coil-spring t . The set-nuts v' on the pitman P' regulate the stroke of the straightener P. Having received its barbs, the fence-wires a pass on into the twister to be twisted together and reeled upon the spool E on the shaft E' .

As I make no claim to that portion of this machine commonly called the "twister," I do not deem it necessary to describe it.

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 fence-wire, the combination and arrangement of the wheel y , having a plain untoothed portion, wheel S, having the slots l , hollow shaft c' , hollow stationary shaft w , guide-plug w^3 , and barb-twister w' , with the frame A, all arranged to operate in the manner and for the purpose set forth.

2. In a machine for barbing fence-wire, the combination and arrangement of the stationary shaft w , guide-plug w^3 , twister w' , vertical sliding head L^2 , lever L, cam 7, cutting-dies d and d^2 , set-screws d' , wheels y and S, and cog-wheels S' and a' , all arranged to operate in the manner and for the purpose set forth.

3. In a machine for barbing fence-wire, the barb-feed described, consisting of the reciprocating plate r' , rod z , hinged to the vertical sliding head L^2 , guide x , lugs z^2 , dog-spring r^2 , coil-spring S^2 , dog r , set-screw o , lever e , levers x^3 and x^4 , and cams e' and e^2 , said feed arranged to travel up and down with the sliding head L^2 by being hinged thereto, as set forth.

4. In a machine for barbing fence-wire, the combination and arrangement, with the feed mechanism, of the levers x^3 and x^4 and e , cams e' and e^2 , and counter-shaft B^4 , to operate the feeds described from either side of the machine in the same direction simultaneously with each other, in the manner set forth.

5. In a machine for barbing fence-wire, the oscillating sprocket-wheel R, arranged on the shaft D^2 , to oscillate in the manner set forth by means of the cranks c^2 and c^5 , and pitman c^4 , to slacken the wires a , so they will remain stationary at the point the barb is being placed

on until the barb is placed on the wires a , and then draw the wires a forward intermittently through the barb-twisters, and permitting the wires a to reel on the spool E continuously, as set forth.

6. In a machine for barbing fence-wire, the barb-straightener P, arranged to oscillate from the standard h at the hinge h' by means of the crank D' , spring t , and pitman P' , so its forked end b will stride the wires a against the barbs, to straighten them up, in the manner set forth.

7. In a machine for barbing fence-wire, the combination and arrangement of the frame A, shafts a^2 , c , D^2 , and D^3 , pinion a' , cog-wheel S' , screw-gear wheels y and S , hollow shaft c' , barb-twisters w' , hollow stationary shaft w , cranks c^2 , c^5 , and D' , pitmen c^4 and P' , cam 7, lever L, vertical sliding head L^2 , cutting-dies

d and d^2 , oscillating sprocket-wheel R, and barb-straightener P, all arranged to operate in the manner set forth.

8. In a machine for barbing fence-wire, the frame A, shafts a^2 , c , D^2 , and D^3 , pinion a' , cog-wheel S' , screw-gear wheels y and S , hollow shaft c' , barb-twisters w' , hollow stationary shaft w , cranks c^2 , c^5 , and D' , pitmen c^4 and P' , cam 7, lever L, vertical sliding head L^2 , cutting-dies d and d^2 , oscillating sprocket-wheel R, and barb-straightener P, in combination with the barb-twisting mechanism described, all arranged to operate in the manner and for the purpose set forth.

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Witnesses:

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