

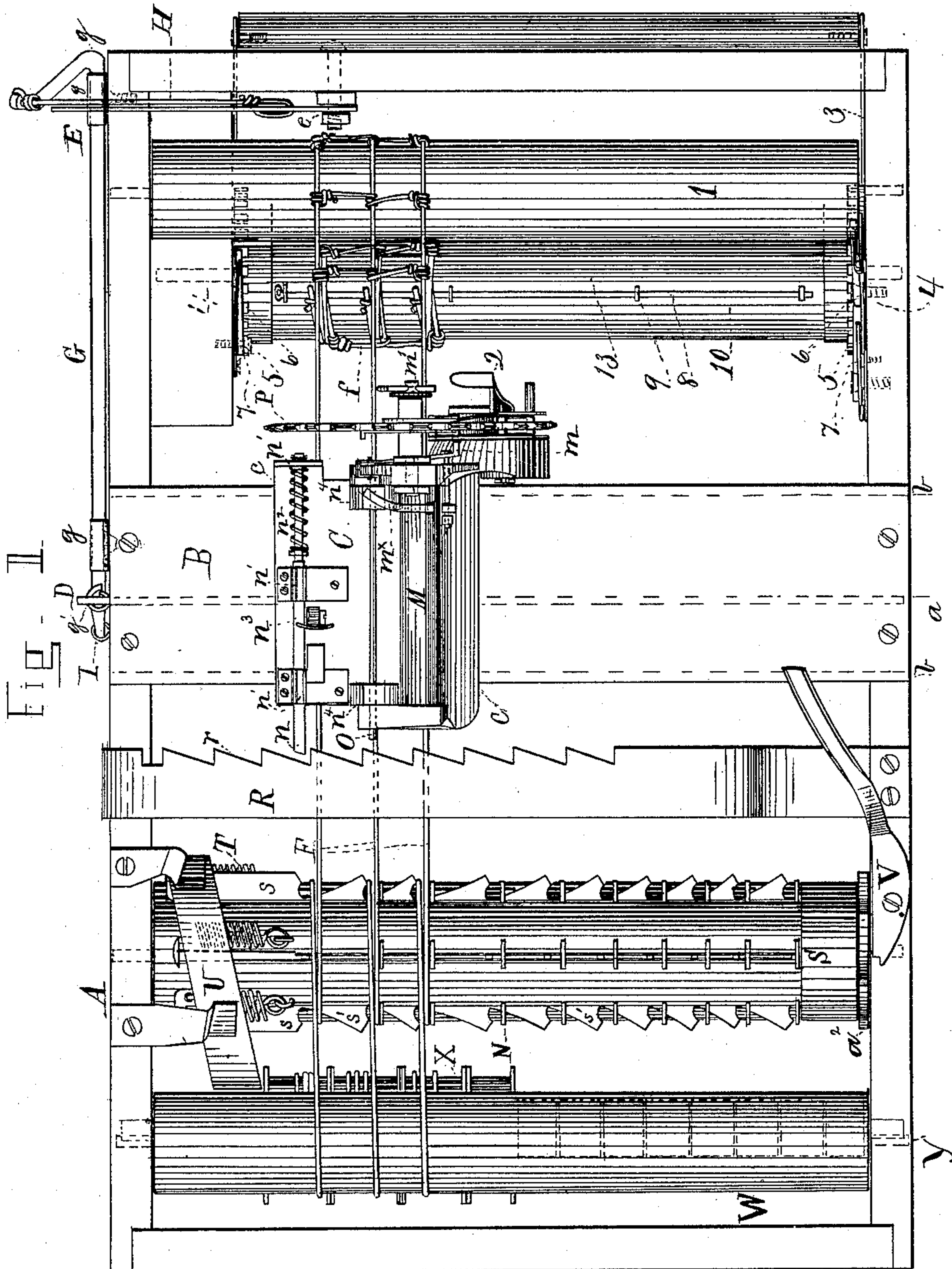
(No Model.)

5 Sheets—Sheet 1.

A. LAND.  
WIRE FENCE MACHINE.

No. 435,042.

Patented Aug. 26, 1890.



Witnesses.  
J. K. Newman  
H. K. Parker

per

Inventor.  
Abel Land  
M. F. Chamblin & Co.  
Attys.

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Fig. 2.

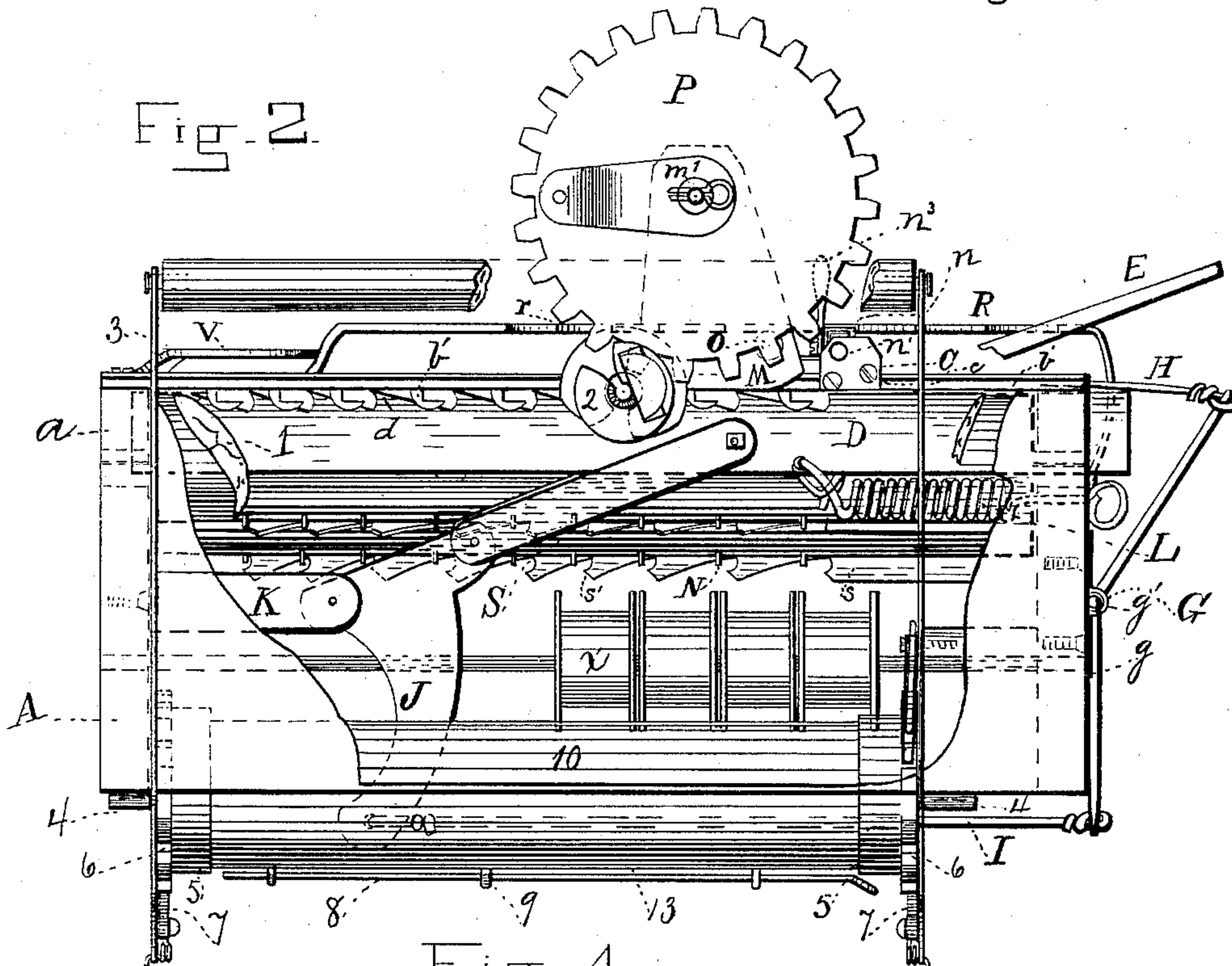


Fig. 4.

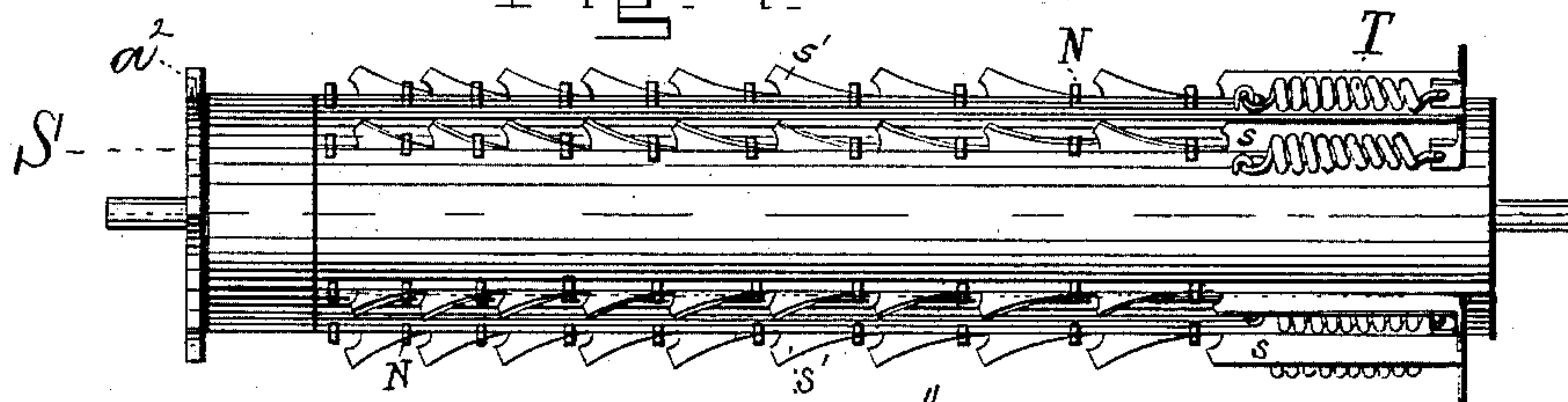
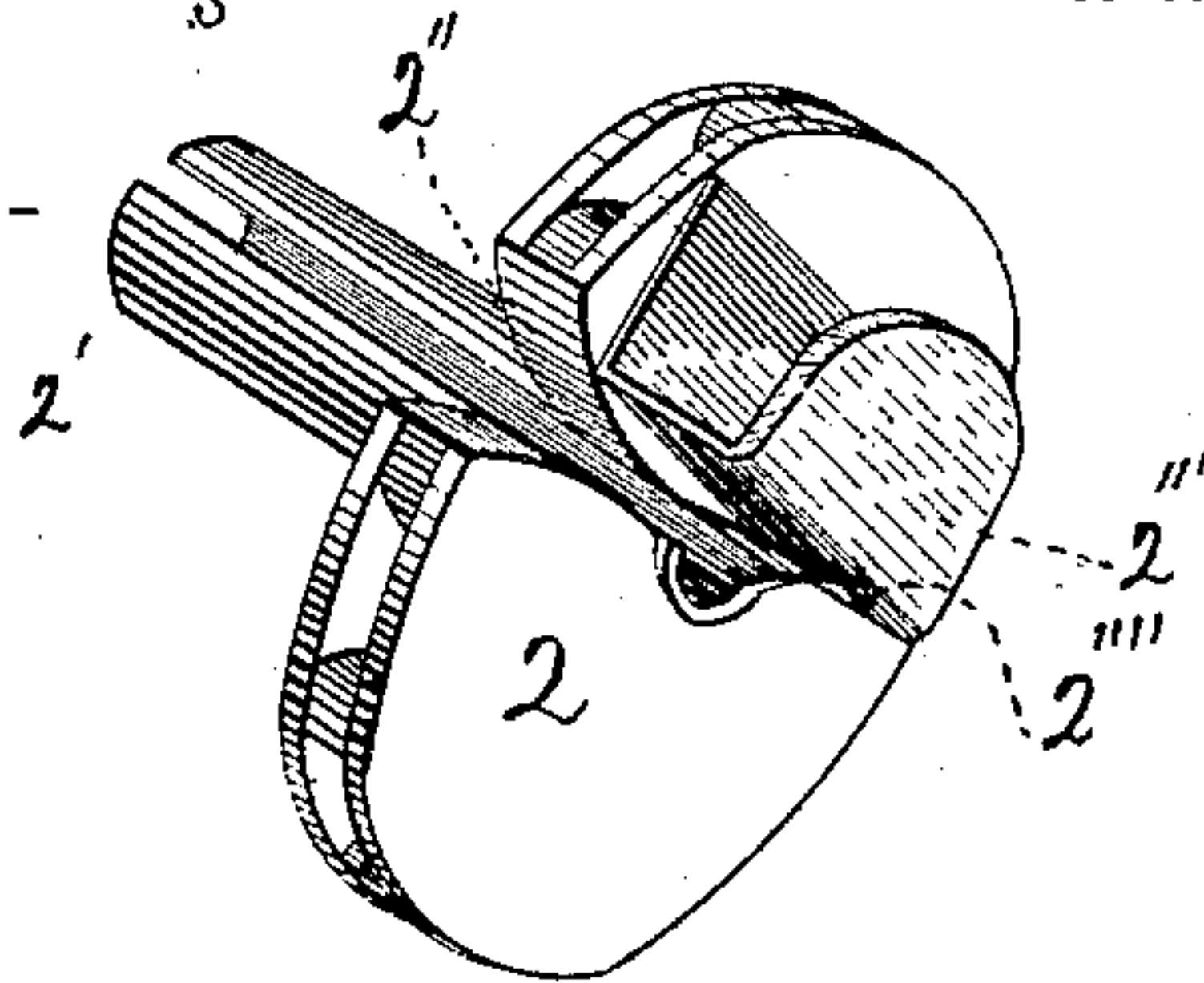


Fig. 7.



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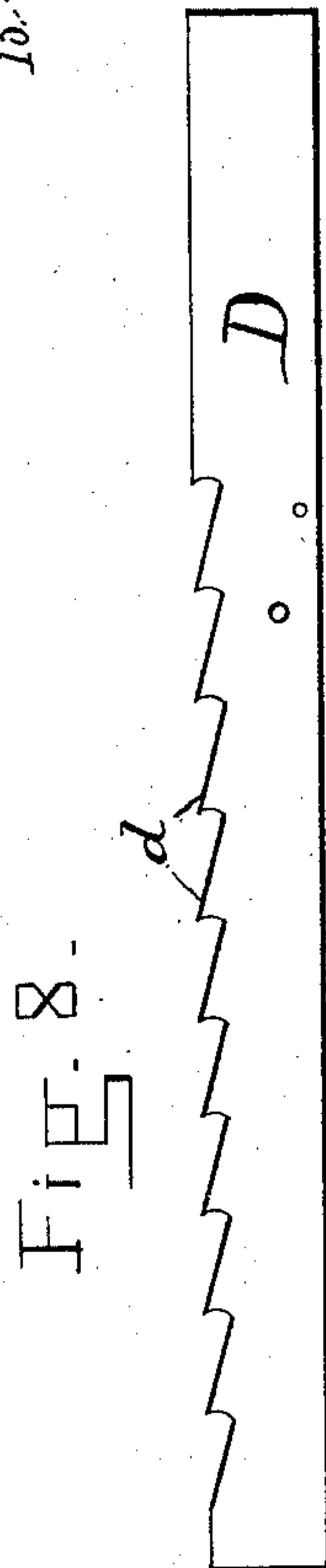
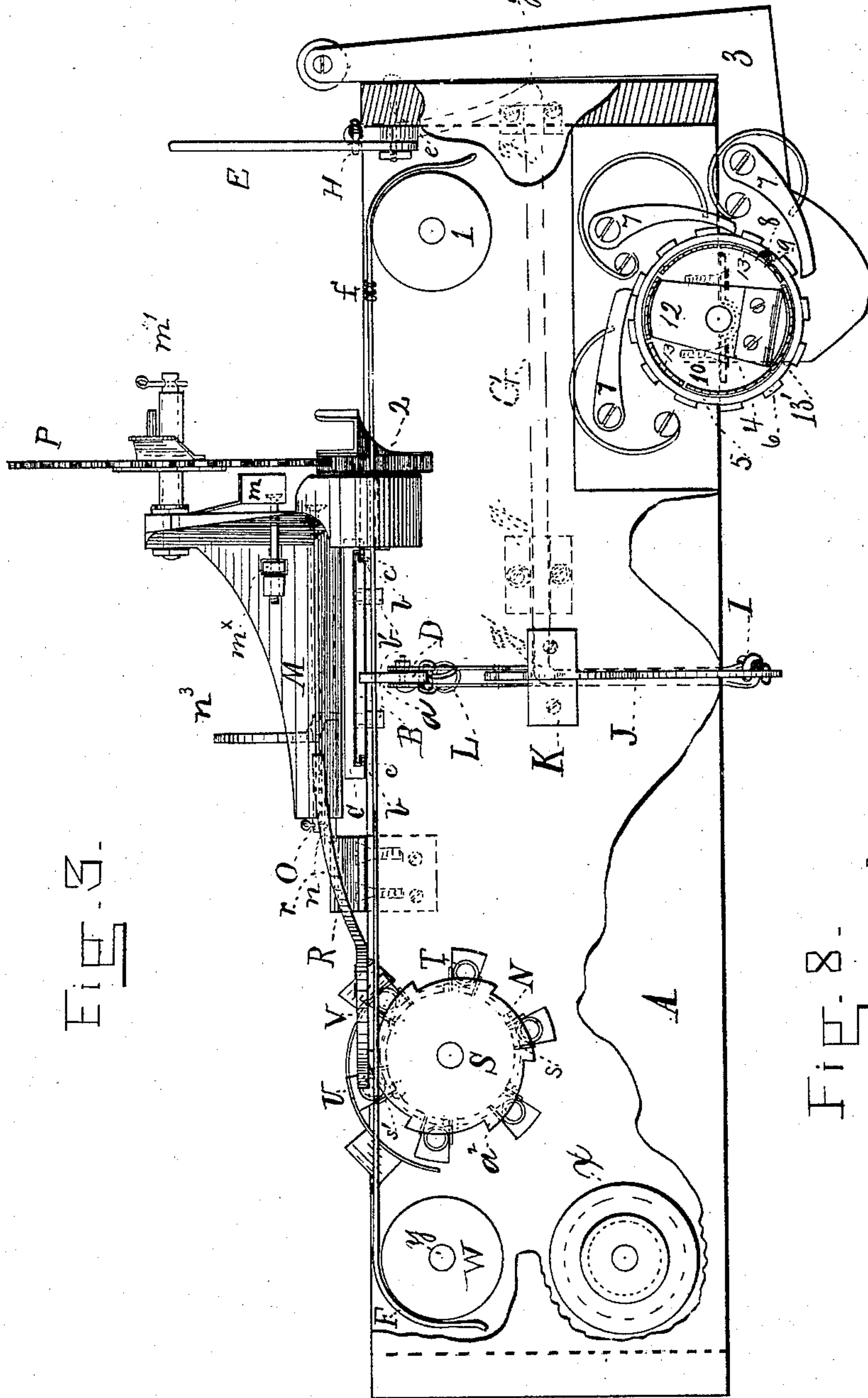
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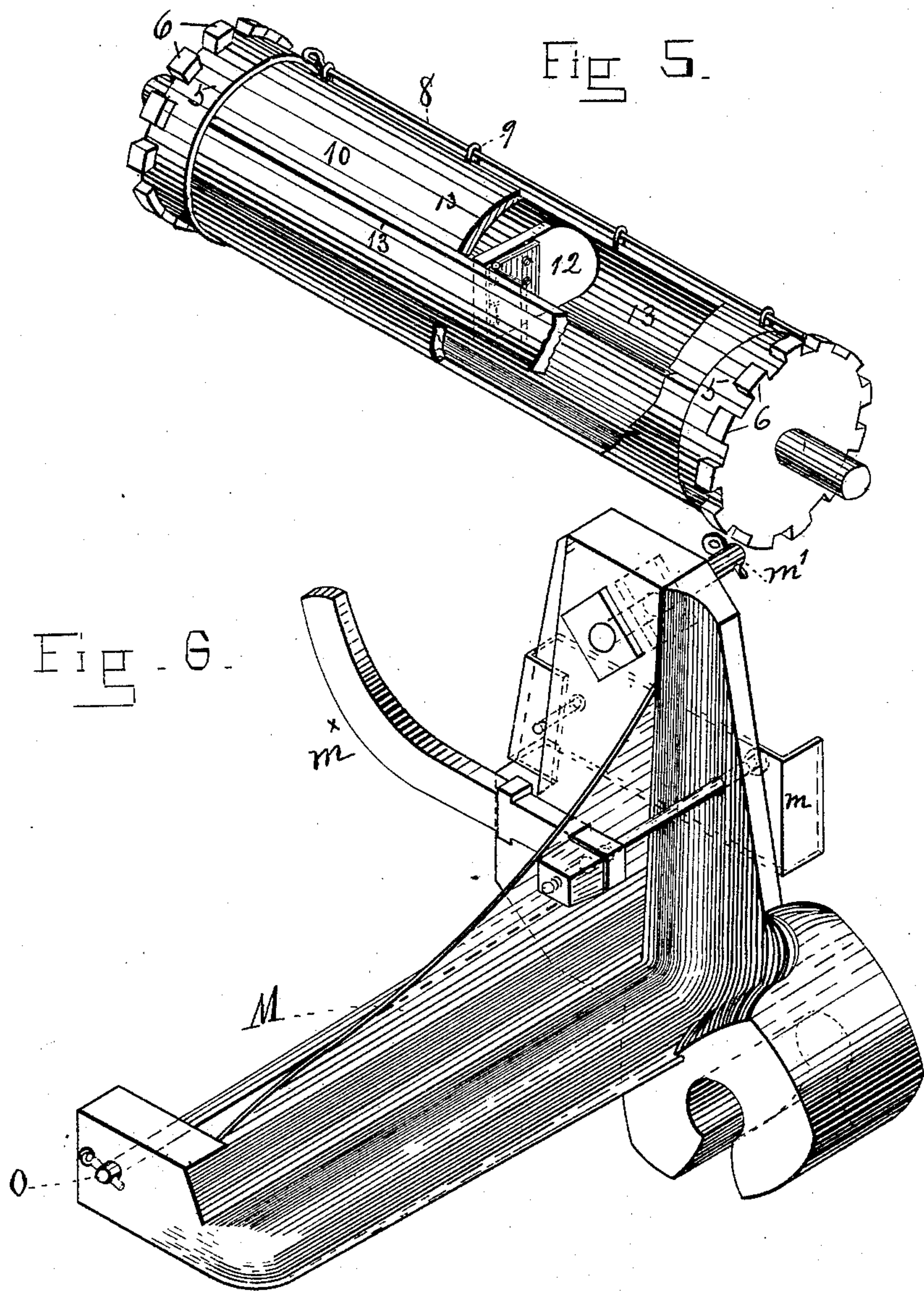
(No Model.)

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A. LAND.  
WIRE FENCE MACHINE.

No. 435,042.

Patented Aug. 26, 1890.



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(No Model.)

5 Sheets—Sheet 5.

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Fig. 9.

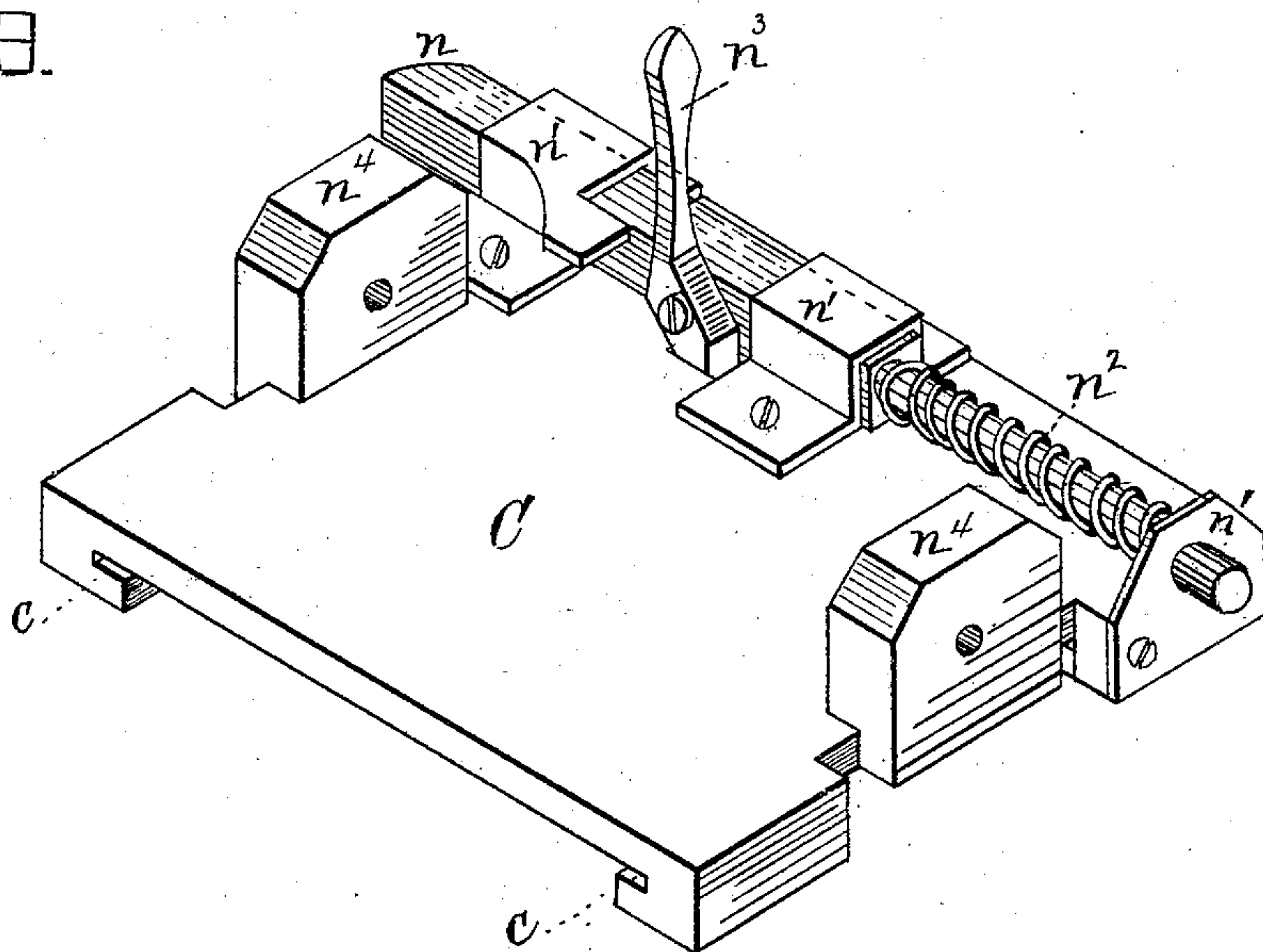
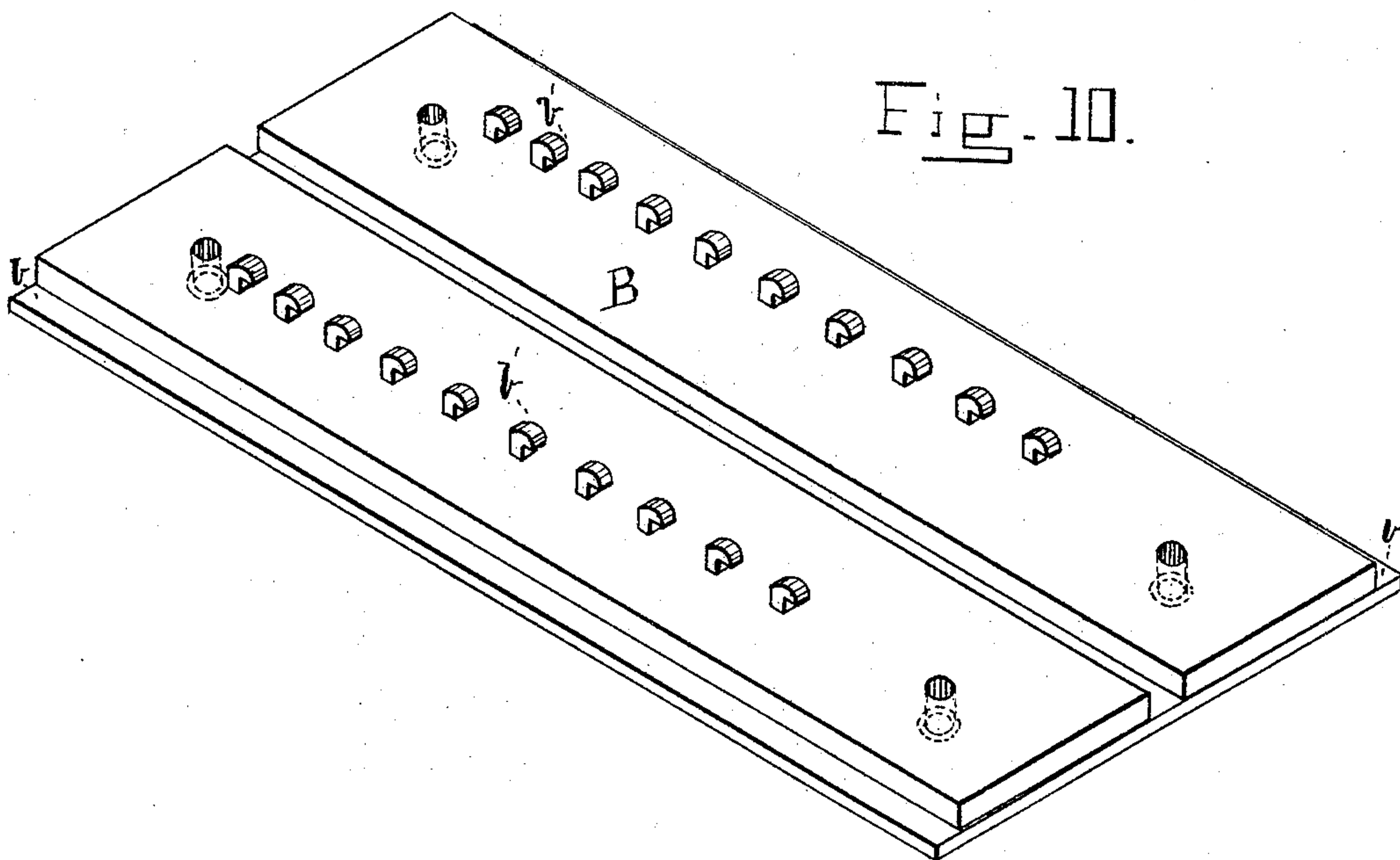


Fig. 10.



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# UNITED STATES PATENT OFFICE.

ABEL LAND, OF HUDSON, MICHIGAN.

## WIRE-FENCE MACHINE.

SPECIFICATION forming part of Letters Patent No. 435,042, dated August 26, 1890.

Application filed May 31, 1890. Serial No. 353,713. (No model.)

*To all whom it may concern:*

Be it known that I, ABEL LAND, a citizen of the United States, residing at Hudson, in the county of Lenawee and State of Michigan, have invented certain new and useful Improvements in a Wire-Fence Machine; and I do hereby 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.

My invention relates to a machine or loom for manufacturing wire fence; and the object of my invention is to provide a machine that can be operated by hand or any suitable motive power, is simple, practical in construction, and effective in operation. I attain this object by a certain combination and arrangement of parts fully described in this specification and illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the machine complete, having the wire in same and in the process of operation. Fig 2 is a partly-broken view in end elevation. Fig. 3 is a similar view in side elevation. Fig. 4 is a detailed view of the feeding-cylinder detached. Fig. 5 is a similar view of the taking-up cylinder. Fig. 6 is a perspective view of the rocking frame upon which the spur-wheel and pinion are mounted. Fig. 7 is a perspective view of the pinion. Fig. 8 is a detailed view of the tension-bar. Fig. 9 is a similar view of the sliding plate. Fig. 10 is a perspective view of the bar upon which said sliding plate works.

The mechanism of my invention is arranged and mounted in a suitably-constructed frame A. Upon the top and across the center of said frame there is a bar B, which is constructed with the reduced portion *b* upon its under sides. This reduced portion is adapted to enter the slots *c* in the shoulder and upon the under side of the sliding plate C. Upon the under side of the bar B there are two rows of hooks *b'*, through which the wires *F* pass. Said hooks, in connection with the tension-bar D, serve to guide the wires in their proper places when being fed, and also to hold them securely when it is necessary to operate the tension-bar D, by means of which the wires may be crimped or tightened. When it is

desired to crimp the wires, the lever E is operated to and fro, and as it is connected with the bar D by means of the mechanism hereinafter described it imparts to said bar a horizontal motion. As the bar D moves to and fro the teeth *d* engage the horizontal wires *F* of the fence, which are held in position by the hooks *b'*, and forces these wires forward against the sides of the hooks. This crimps and tightens the wires. The tension-bar D is located underneath the bar B, and has bearings in the slots or vertical orifices *a* in the sides of the frame A, and upon the top of said tension-bar D there are the teeth *d*, which engage the wires and tighten the same and help to more fully guide and hold in their places the wires when being fed. Said tension-bar is operated by means of the crank-lever E, which has pivotal bearings *e* in the end of the frame A, and is connected with the side bar G by means of the rod H. The side bar G has bearings *g* upon the side of the frame and has its ends *g'* bent at right angles. To its lower end is attached the rod I, which is connected to the lower end of the L-shaped lever J. This lever is pivoted in the end of the projecting bracket K and has its upper end attached to the tension-bar D. To the inner side of the frame A there is secured a spiral spring L, which also is attached to the tension-bar D. The purpose of said spiral spring is to pull back the tension-bar D to its normal position when operated by the mechanism described.

M represents the rocking frame, which is rigidly secured to the ends of the rod O, that has bearings in the projecting ends *n* of the sliding plate C, whereby said frame M can be rocked to and fro with a view of preventing the same from coming in contact with the wires *F* when the sliding plate C is being located at different points upon the bar B, with a view of tying the vertical wire *f* or woof of the fence. Upon the end of the rocking frame there is a brake *m*, for the purpose of checking the spur-wheel P. Said brake is operated by means of the lever *m'*. The spur-wheel P is mounted upon the projecting axle *m'* of the frame M, and drives the pinion 2, which is rigidly secured in the end of the rocking-frame M.



The pinion 2 is constructed, as shown in Fig. 7, with the hollow shaft or journal 2', which has bearings in the end of the rocking frame M. The periphery of this pinion contains perforations adapted to receive the spurs of the wheel P. Said pinion is further constructed with the segment 2'', cut away, and is provided upon its side with a suitable guide 2''' for the woof-wire. It also contains near its center an eye 2''', through which the woof-wire is threaded. As the warp-wires F are fed through the machine the pinion 2 is threaded with the woof-wire, and by means of the sliding plate C is located over the warp-wire to be tied, so that the warp-wire, owing to the slot 2'', passes up to the center of said pinion. The spur-wheel is then revolved, which imparts motion to the pinion, and as the pinion revolves it secures the woof-wire around the warp-wire. The pinion is then elevated by means of the rocking frame M, and the sliding plate C pushed forward until the slot in the pinion 2 is again directly over the warp-wire, the rocking frame is again lowered and the same operation repeated, and so on until the woof-wire is extended across the fence. The sliding plate C, by means of the construction heretofore described, slides upon the bar B. Upon one side of the plate C there is a bar  $n$ , which has the spiral springs  $n^2$  upon one end and works in the boxes  $n' n' n'$ . This bar is operated by means of the lever  $n^3$ . This bar adjusts its ends at any desired point in the angular teeth  $r$  of the cross-bar R, and thereby securely prevents the sliding plate C from moving forward while the machine is in operation.

S designates the feeding-cylinder, which has bearings in the upper front sides of the frame A. Upon the outside of this cylinder there are located in grooves at intervals the longitudinal bars  $s$ , having in their upper sides the curved saw-toothed projections  $s'$ . Over said bar and in front of each of said projections there are the staple-shaped irons N.

Upon one end of the cylinder S there are the spiral springs T, which serve to force and keep in their normal position the bars  $s$  while the wires F are passing around and over said cylinder. The bars  $s$ , in connection with the spiral springs T, the toothed projections  $s'$ , and the staple-shaped irons N, answer the purpose of guides and clutches for the wire, whereby the wire is rigidly clutched and held at any point where the machine is stopped. The spiral springs T are held in position by means of the curved iron U, which is secured to the side of the frame A. At one end of the cylinder S there is also a pawl or ratchet V, which likewise engages the notches  $a^2$  upon the end of the cylinder and prevents the cylinder from rotating backward.

W indicates a cylinder which assists the wire from the spools X to the feeding-cylinder. The revolving spools X revolve upon an iron rod Y, which likewise has bearings or jour-

nal-boxes in the frame A underneath the cylinder W.

In the front end of the frame A there is located a cylinder 1, which assists the wire fence, when completed, to the taking-up cylinder 10, which is located underneath the cylinder 1, and has bearings in removable journal-boxes 4, secured to the bottom of the frame A. The taking-up cylinder 10 is operated by means of an L-shaped lever 3, which is secured to the shaft of the cylinder 10, adjacent to the journal. There are two bands 5 5 around each end of the taking-up cylinder 10, having the notches 6, whereby the pawls or ratchets 7 (which are operated by the springs) engage said cylinder at every point and prevent the same from running backward when taking up the completed article of wire fence. A very important feature of this cylinder is the inwardly-beveled-edge staves 13 and the outwardly-beveled-edge stave 13'. The stave 13' is held in position by a brace 12, which is hinged thereto and extends across the cylinder and rests upon the staves upon the opposite side. It will be observed, as all the staves composing said cylinder (excepting the stave 13') have their side edges beveled inwardly and fit closely together, that when the stave 13' is forced into its place in said cylinder it will compress the staves 13 closely together, and that its outwardly-side-beveled edges serve as a rest upon which the staves 13 are supported and held in their normal positions. As the stave 13' is supported by the brace 12, as aforescribed, the cylinder 10 is rigidly and securely held together. The brace 12 prevents the staves that compose this cylinder from shrinkage or growing smaller in the center and the bands 5 5 from shrinkage or growing smaller at the ends, owing to the weight of the wire. This is a decided improvement over the ordinary taking-up wire cylinder, and obviates a difficulty that has occasioned a considerable loss of wire fence, owing to a non-uniformity of wrapping the finished product upon a cylinder that warps and shrinks in the center, owing to the great weight of the wire fence. To remove the finished product from this cylinder all that is necessary is to remove the bands 5 5 and force upward the brace 12 by inserting an instrument into the cylinder from the end. When this is done, the staves fall in, and when removed the wire fence is rolled and ready for shipment. By removing the journal-boxes 4 the cylinder 10 can be taken out and the completed wire fence taken therefrom. There is an outside iron rod 8 running through the staples 9 the entire length of the cylinder 10, to which the ends of the horizontal wire F are secured when beginning to manufacture the fence. Said rod holds the completed article upon the cylinder until it is thoroughly wound around the same.

It will be observed that by operating vertically the lever 3 the horizontal wires F are



pulled through the machine, and in being pulled through the tying mechanism heretofore described secures at intervals the vertical wires or woof *f*. It will also be observed that the machine will manufacture a fence of as many horizontal wires as desired.

The machine shown is calculated to make a fence with as many as ten horizontal wires *F*, which would be of special value for chicken-yards.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a wire-fence machine, the combination, with any suitable frame, of a bar *B*, located near the center and upon the top of said frame, having upon its under side the hooks through which the warp-wires are guided and by means of which said wires may be crimped or tightened, the sliding plate *C*, located and operating horizontally upon said bar, the rocking frame *M*, secured to the ends of the rod *O*, which is pivoted in suitable bearings upon the top of the sliding plate *C*, the longitudinal bar *n*, located upon the top of the plate *C*, the spur-wheel *P*, mounted upon the projecting axle of the rocking frame *M*, the slotted pinion 2, journaled in the end of the rocking frame *M*, the angular-toothed cross-bar *R*, located upon the top of the frame and in the rear of said sliding plate, the angular-toothed tension-bar *D*, located under the sliding bar *B* and having bearings in the sides of said frame, and the mechanism whereby said tension-bar *D* is horizontally operated, substantially, as described, and for the purpose set forth.

2. In a mechanism for manufacturing wire fence, comprising warp and woof wires and secured together where they cross, the combination, with any suitable frame, of a bar *B*, located near the center and upon the top of said frame, the sliding plate *C*, located and operating horizontally upon said bar, the rocking frame *M*, secured to the rod *O*, the rod *O*, pivoted to the top of said sliding plate, the longitudinal bar *n* upon the top of the plate *C*, the spur-wheel *P*, mounted upon the projecting axle of said rocking frame, the slotted pinion 2, journaled in the end of the rocking frame *M*, the angular-toothed cross-bar *R*, the tension-bar *D*, located under the sliding bar *B* and having bearings in the sides of the frame of the machine, the mechanism whereby the tension-bar *D* is horizontally operated, the feeding-cylinder *S*, having bearing in the sides of the frame, the longitudinal bars *s*, the staple-shaped irons *N*, and

the spiral springs *T*, the curved irons *U*, which hold in position the spiral springs *T*, the spools *X*, rotating upon the stationary rod *Y*, the assisting-cylinder *W*, the pawl *V*, which engages the cylinder *S*, the cylinder 1, having bearings in the upper front part of the frame of the machine, the taking-up cylinder 10, having bearings in the removable journal-boxes 4, the pawls and springs at each end of the said cylinder 10, whereby said cylinder is engaged, and the L-shaped lever 3, secured to the revolving shaft of the cylinder 10, whereby the mechanism is operated, substantially as described.

3. In combination with the co-operating mechanism of a wire-fence machine, the pinion 2, having a hollow shaft or journal 2', upon which the same is mounted, the segment 2'', cut away, and an eye near its center through which the woof-wires are threaded, substantially as described, and for the purpose set forth.

4. In combination with the co-operating mechanism of a wire-fence machine, the feeding-cylinder *S*, having upon its outer surface grooves, the toothed bars sliding longitudinally in said grooves, the staple-shaped irons that secure and hold said bars in position, and the spiral springs *T*, which operate the bars, substantially as described, and for the purpose set forth.

5. In combination with the co-operating mechanism of a wire-fence machine, the taking-up cylinder 10, composed of inwardly-beveled staves and the outwardly-beveled stave 13', the stave 13' having the brace 12 hinged upon its inner side, the notched bands 5 upon each end of said cylinder, and the rod 8 extending longitudinally the entire length thereof, substantially as described, and for the purpose set forth.

6. In combination with the co-operating mechanism of a wire-fence machine, the bar *B*, the sliding plate *C*, located and operating horizontally upon said bar, the rocking frame *M*, pivoted upon the ends of the rod *O*, the rod *O*, having bearings upon the top of the sliding plate *C*, the spur-wheel mounted upon a projecting axle of the rocking frame *M*, and the slotted pinion 2, mounted upon its axle in the end of the rocking frame *M*, substantially as described.

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

ABEL LAND.

Witnesses:

BERT D. CHANDLER,  
FRANK FELLOWS.