

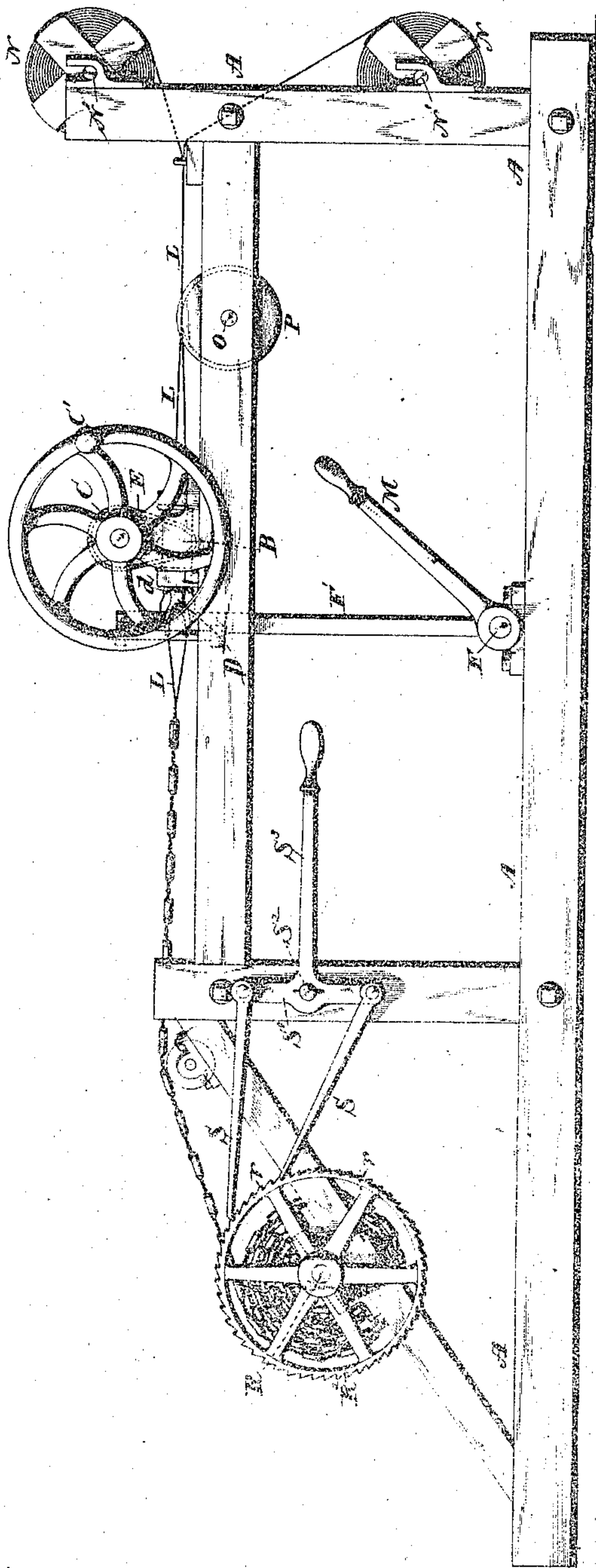
(No Model.)

4 Sheets—Sheet 1.

C. F. GILLET.
FENCE MACHINE.

No. 385,304.

Patented June 26, 1888.



Witnesses,
Chas. Williamson,
Henry C. Hazard

Inventor,
C. F. Gillet, by
Erindell & Russell, his attys

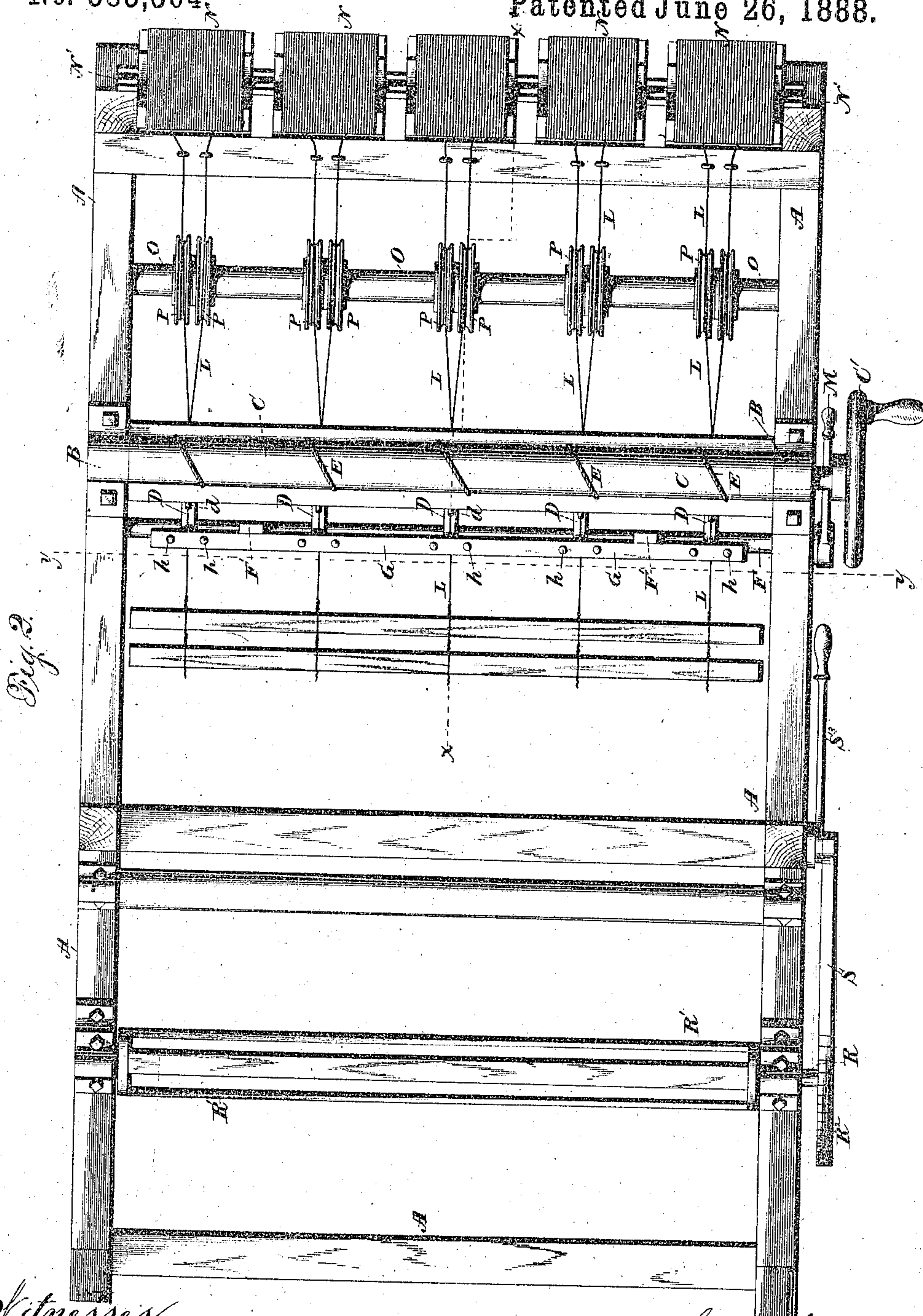
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4 Sheets—Sheet 3

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Fig 3

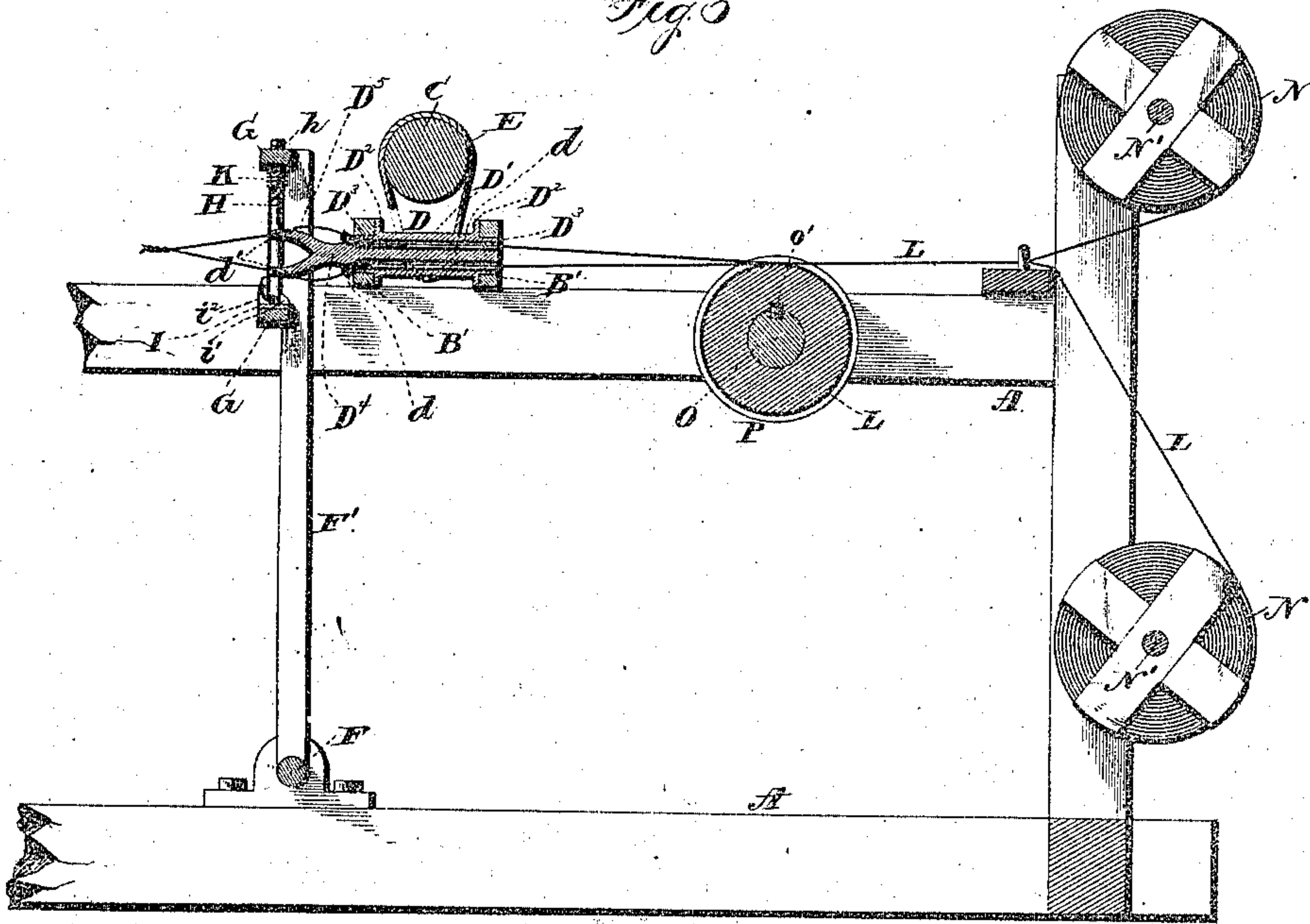
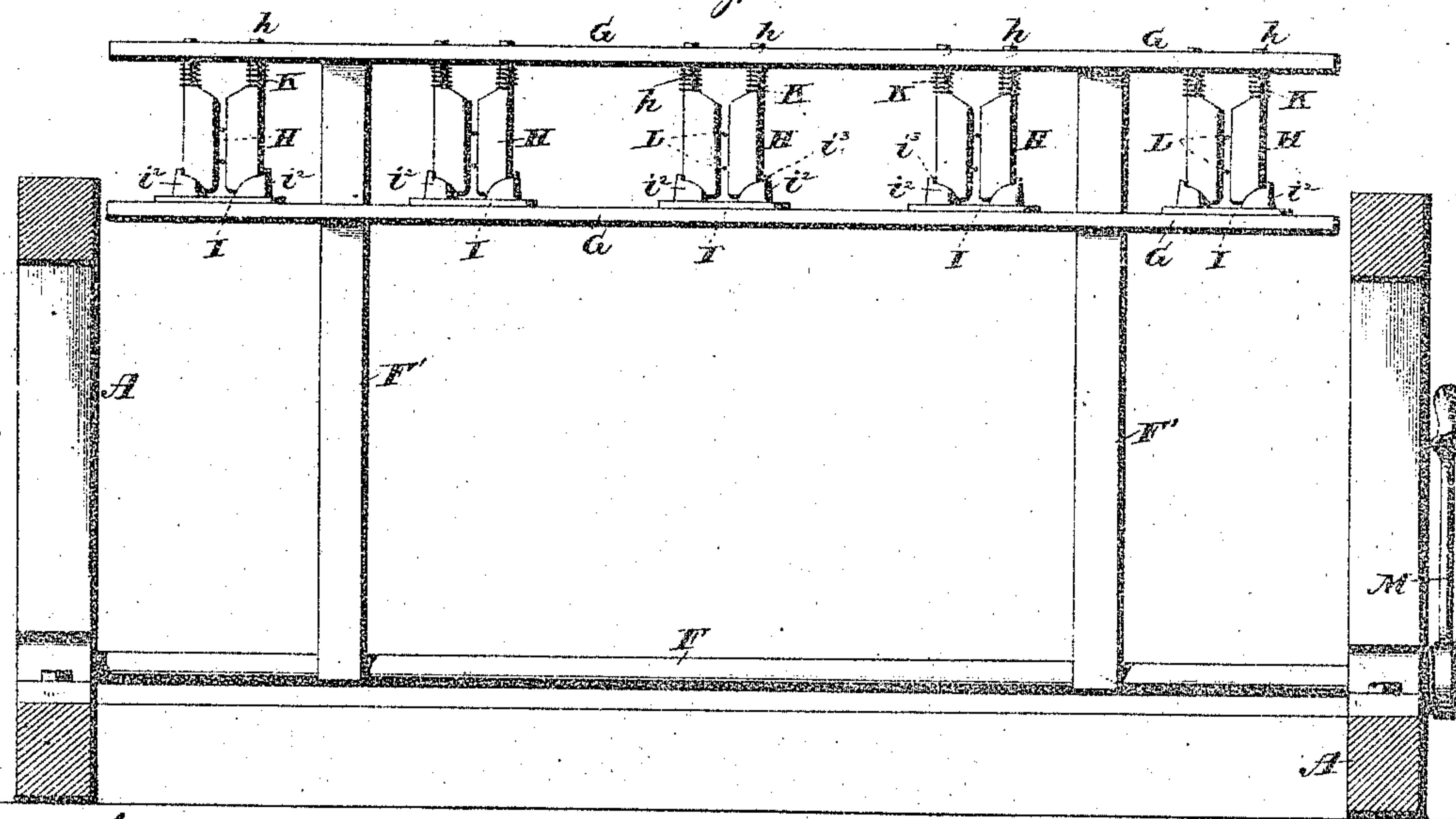


Fig 4



Witnesses,
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C. F. Gillet, by
Chas Russell, his Att'y

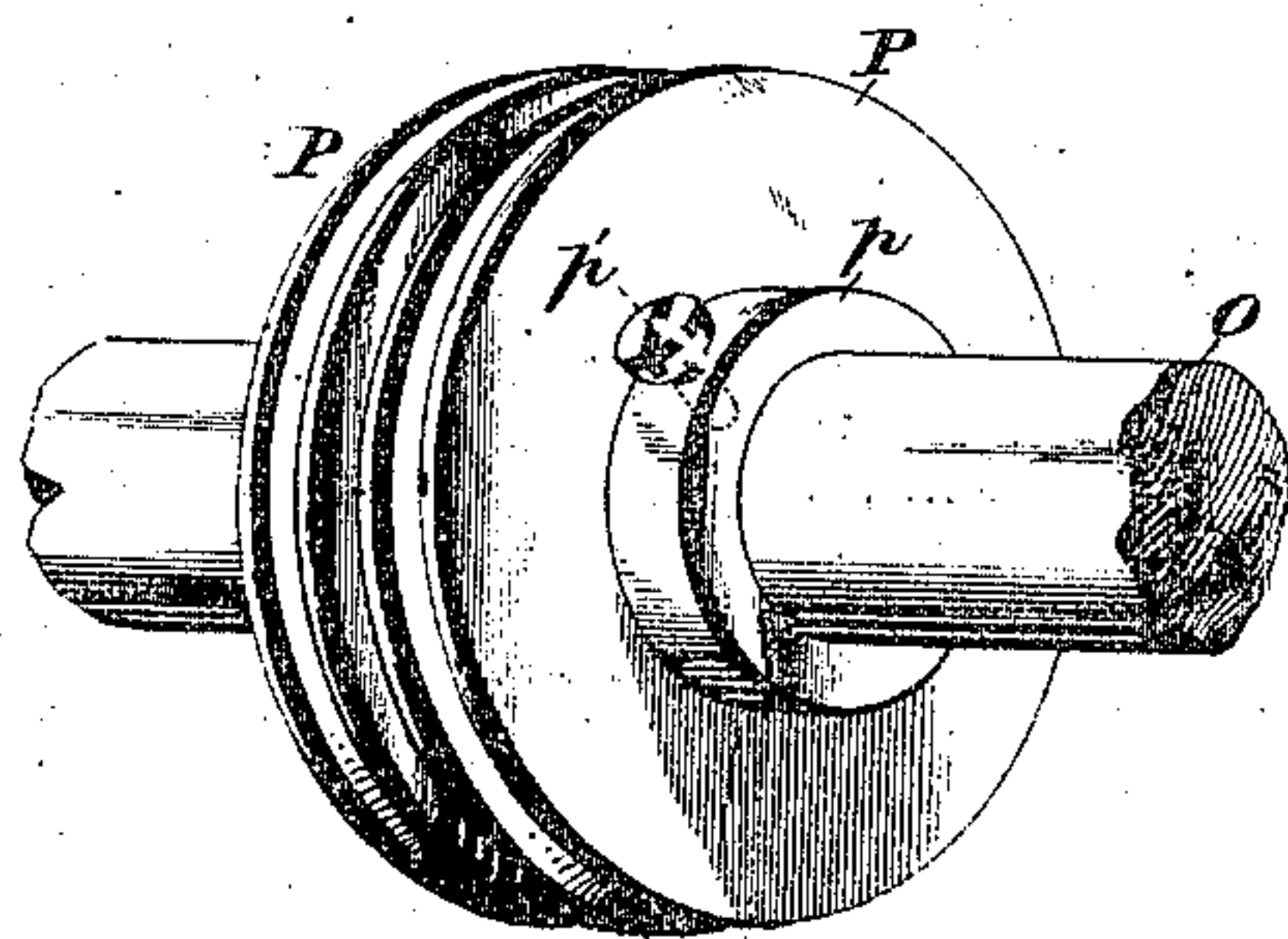
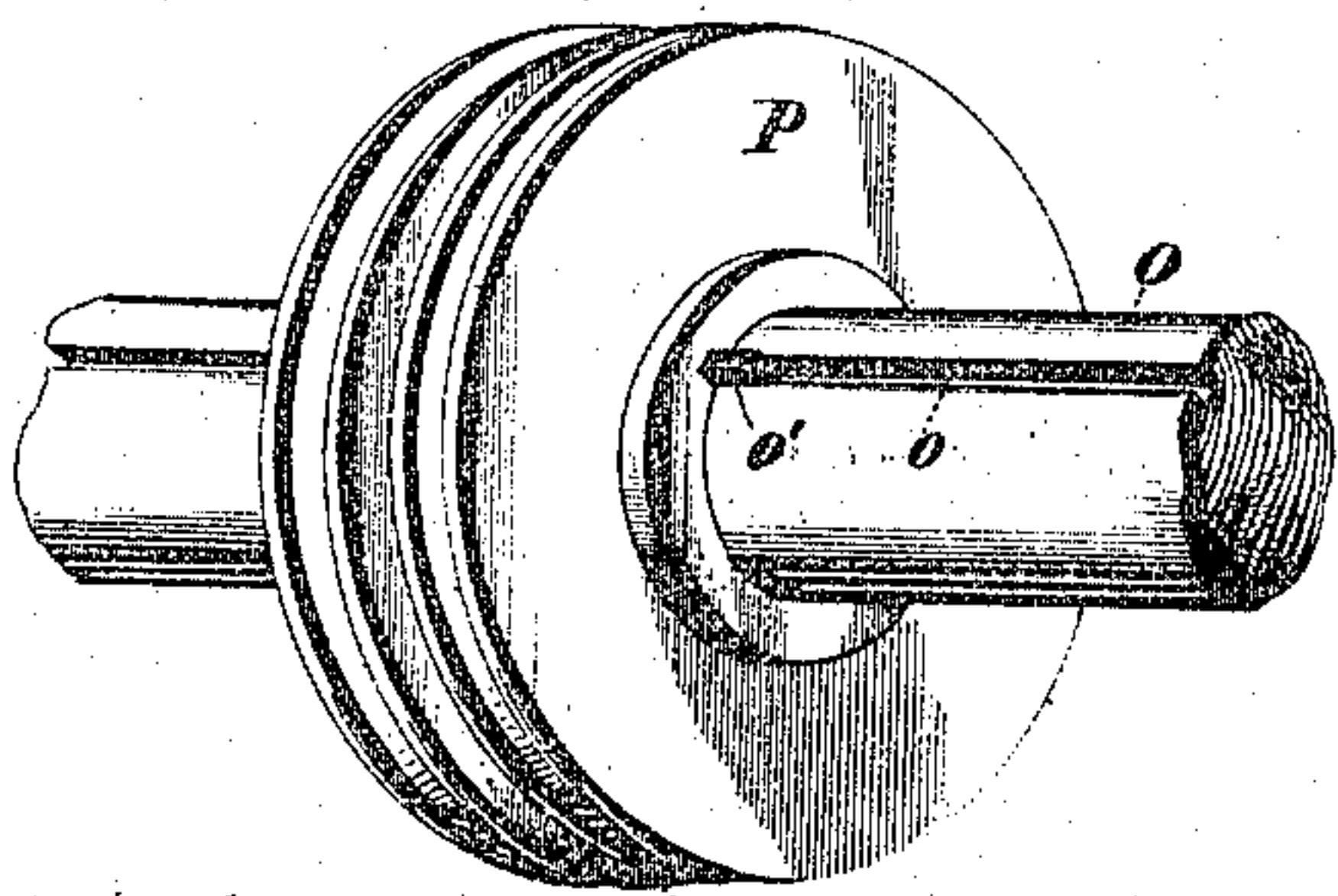
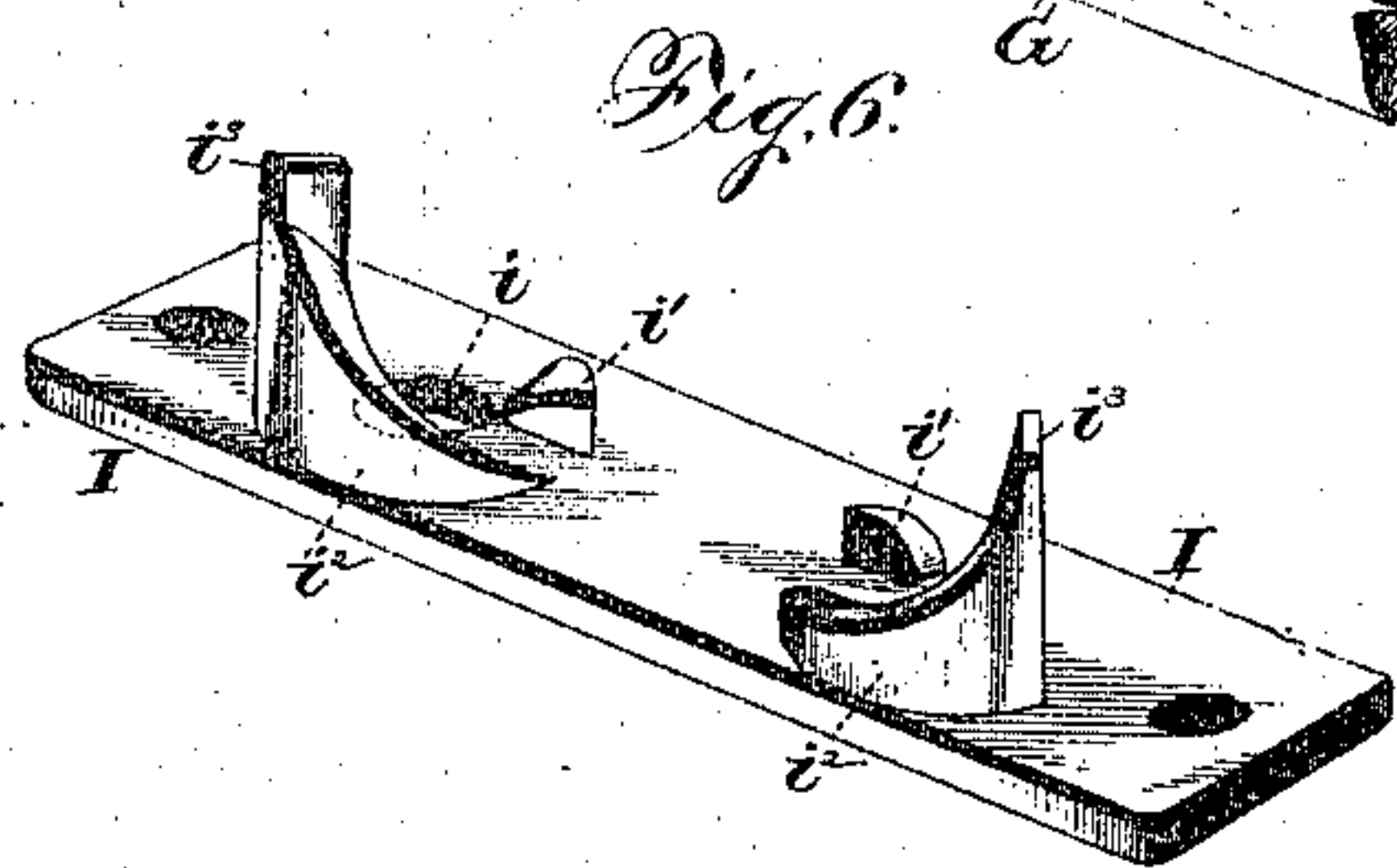
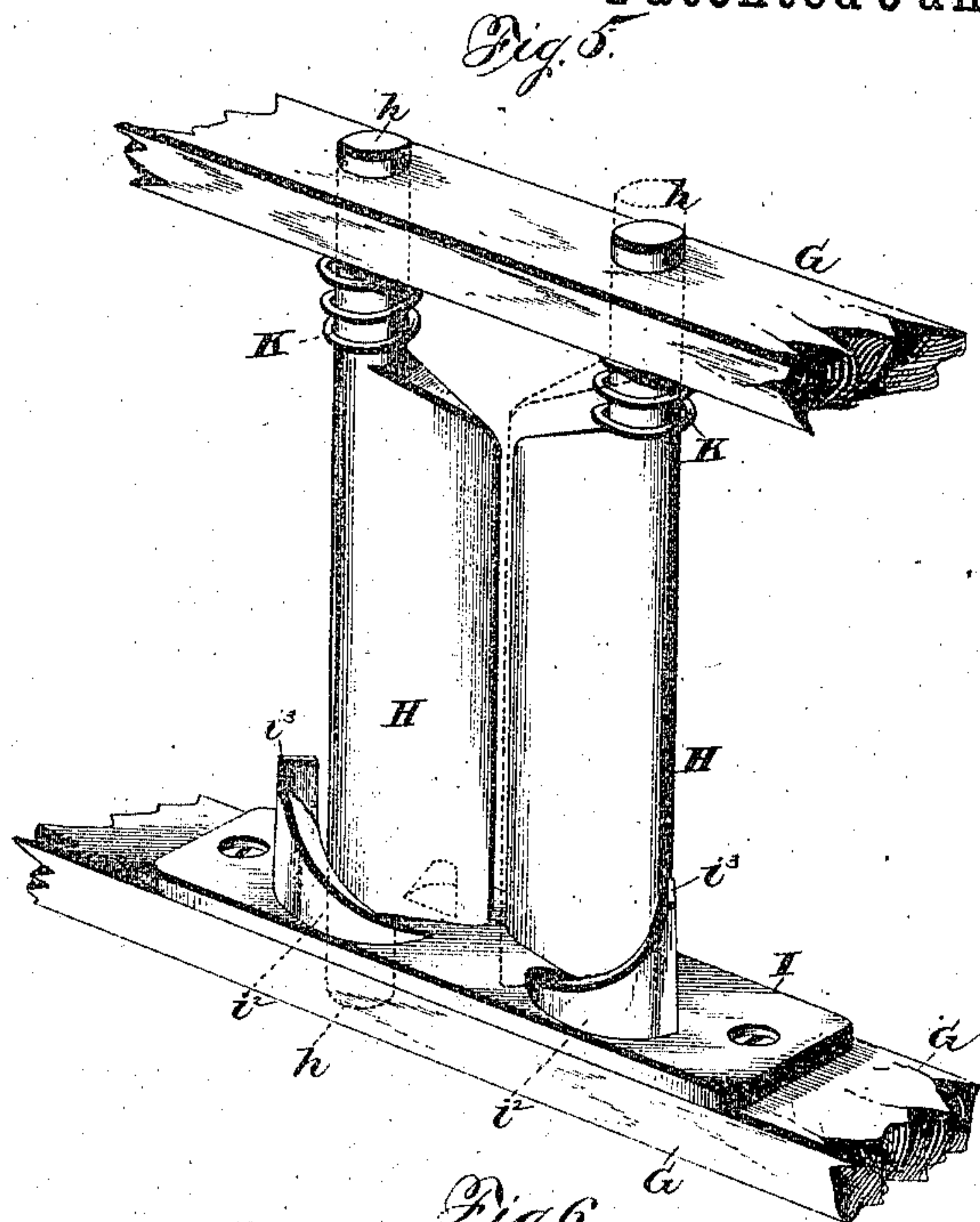
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C. F. GILLET.
FENCE MACHINE.

No. 385,304.

Patented June 26, 1888.



Witnesses:
Chas. Williams, Jr.
Henry B. Hazard

Inventor:
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UNITED STATES PATENT OFFICE.

CHARLES F. GILLET, OF SPRINGFIELD, ILLINOIS.

FENCE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 385,304, dated June 26, 1888.

Application filed November 30, 1887. Serial No. 256,516. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. GILLET, of Springfield, in the county of Sangamon, and in the State of Illinois, have invented certain new and useful Improvements in Fence-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof reference being had to the accompanying drawings, in which—

Figure 1 shows a view of my machine in side elevation; Fig. 2, a plan view of the same; Fig. 3, an enlarged vertical sectional view on line $x x$ of Fig. 2; Fig. 4, an enlarged transverse sectional view on line $y y$ of Fig. 2; Fig. 5, a detail perspective of a portion of the clamp-shuttle used in my machine; Fig. 6, a detail perspective view of one of the jaw-supporting plates of the clamp-shuttle; Fig. 7, a detail perspective view of a portion of the tension-pulley shaft, showing one way of adjustably fixing the pulleys in the shaft; and Fig. 8, a similar view showing a modification of the adjustable attachment of the pulleys.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is to provide an improved fence-making machine; and to this end my invention consists in the machine and in the construction, arrangement, and combination of the parts thereof, as hereinafter specified.

In the drawings, A A designate the frame for supporting the operative parts of my machine or apparatus. Such frame can be of any desired form, construction, and material, though I prefer to make it of wood and in a form substantially as shown in the drawings. On the upper side of this frame are the two journal-bearings B B, in which are journaled the ends of the shaft of the twister-driving roller or drum C. A hand or crank wheel, C', is shown attached to such shaft for rotating the roller; but any other desired hand or power device or mechanism can be used for this purpose instead of the crank-wheel without departure from my invention. Journaled below this roller or drum C are the twist-ers D D, of any desired number. In the drawings I show the series of twist-ers as consisting of five similarly-formed devices located at equal distances from each other; but with the driving-connections used between the roller C and the

twist-ers, obviously, the latter can be increased or diminished in number and readily changed as to their relative positions.

Each twister has the plane cylindrical part D', with the flanges D² D² at its opposite ends. This construction makes of the main portion of the body of the twister a flanged pulley or spool, for a purpose to be described herein-
after. At the opposite ends of this main portion are the reduced portions D³ D³, forming journals for the twist-ers and supported in suitable journal-bearings, B' B', on cross-beams of frame A A. From one of these reduced portions or journals of the twister there extends a neck, D⁴, having on its outer end a fork, D⁵.

Tubes or pipes $d d$, for the passage of the two wires to be twisted, run throughout the body and journal portions of the twister, and at their ends from which the wires issue are turned outward in opposite directions, as shown, so as to guide the wires to the respective wire-receiving openings $d' d'$ in the arms of twister-fork D⁵. The use of these tubes or pipes to form the wire-passages, instead of merely coring out the body of the twister for the same purpose, makes the proper threading of the wires through the twist-ers much easier.

The twist-ers are connected with the driving roller or drum, so as to be driven therefrom, by bands E E, of cord, rope, chain, or other material, passing around the roller and the pulley or spool portion of the respective twist-ers, as shown best in Figs. 2 and 3. With this construction, obviously, the positions of the twist-ers can be changed as desired, their respective bands being slid along the roller C as the change in position of the twist-ers is made.

Pivoted or journaled in the lower portion of the frame below and beyond the ends of the twister-fork arms is the transverse rock shaft F, provided with the upright arms F' F'. Carried by these arms is a frame consisting, essentially, of the upper and lower parallel bars G G, and extending across the machine opposite the series of twist-ers. Said bars can be supported entirely by attachment to arms F' F', or they can be connected with such arms in any desired way and have distance-pieces or upright bars between them to make a solid frame.

Pivoted, respectively, in the upper and lower bars of this frame are the upper and lower pivots or bearings of a series of swinging wings or jaws, H H. Each of these wings consists of the projecting portion or body with the pivots $h h$ in line with each other, but to one side of the body of the wing. The swinging wings or jaws of the series are arranged in pairs, so that as the two composing any pair are swung toward each other their edges will nearly touch on a line directly opposite the axis of one of the twisters.

Upon the lower bar G are the series of bearing-plates II—one for each pair of wings—provided with openings $i i$ for receiving the lower wing-pivots $h h$, and with lugs $i' i'$ to engage the sides of the wings toward the twisters when such wings have been swung in to stand toward each other, as described hereinbefore. As the wing-carrying frame is moved outward by the rocking of shaft F and swinging the arms F' F', the wings will then be held by lugs $i' i'$ from being swung back by anything pressing against them.

At the outer sides of the wings, away from the twisters, are the cams $i'' i''$ on the plate I—one for each wing—so situated and shaped that as the wings are swung outward away from each other their lower ends will ride up the cams, so as to cause the wings to be raised bodily upward, as indicated in Fig. 5. The cams are, as shown, curved lugs having inclines beginning close to the wing-bottoms when the wings stand swung inward toward each other and rising upward and outward from such points. The lugs are curved on arcs struck from the axis of motion of the wings, in order that their inclines may properly engage the lower ends of the wings throughout the swing of the latter.

At the upper and outer ends of the inclines on the lugs are projections $i''' i'''$, to act as stops to limit the outward swing of the wings. The upper pivots of the wings are made long, so as to allow the necessary up-and-down movement of the wings as the latter swing and ride up and down the cam-inclines on lugs $i'' i''$.

With the wings swung outward, and consequently raised bodily upward by the cams, as described, if they be released their weight will cause their lower ends to ride down over the inclines of the cams, so as to swing the wings inward toward each other again.

Where the wings are made of metal, as I prefer, their own weight will be sufficient to cause them to ride down and be acted upon by the cams, as described. To supplement the weight of the wings in this matter, springs K K can be used, coiled about the upper pivots of the wings and pressing down upon the latter. The pair of wires from each twister passes out between the wings of the respective pair opposite such twister.

On the rock-shaft F is a lever, M, for actuating it; but any other desired means for that purpose may be used.

The spools or reels N N, for supplying the

two wires to each twister, are mounted on suitable shafts, N' N', supported one above the other in bearings on the frame A A.

As it is most desirable in order to insure uniform action of the machine and the making of good even fence that the wires should all be under equal tension as they pass to the twisters, I employ the tension devices, constructed as follows: Journaled in bearings on the frame A A is the transverse shaft O, carrying grooved or flanged pulleys P P, arranged in pairs, as shown, one pulley for each wire coming from reels N N. Such pulleys are attached to the shaft, so as to rotate therewith, but preferably by connections allowing adjustment of them along the shaft to suit the desired spacing or location of the wires. Any desired form of adjustable connection between the tension-pulleys and the shaft O can be used. For instance, a keyway, o , can be cut along in the shaft and in the pulleys, and keys $o' o'$ can be used, as shown, to key the pulleys to the shaft at any desired points; or, as shown in Fig. 8, the pulleys can be provided with hubs p and set-screws p' , tapped through the hubs and engaging the shaft. Upon loosening the set-screws the pulleys can be adjusted along the shaft, and then fixed as adjusted by screwing said screws in again.

Where the keys and keyways in shaft and pulleys are used, the keys can be loosened, the pulleys adjusted, and the keys driven in again to fix the pulleys in place as adjusted.

I contemplate providing friction devices, preferably adjustable, to prevent the too easy turning of the pulley-bearing shaft O.

With the adjustable friction devices the resistance to the turning of the shaft, and consequently of all the pulleys alike, can be regulated as desired.

The wires L L from the reels N N pass around their respective pulleys P P, so that the latter must revolve as the wires are drawn out in the operation of the machine. As the pulleys are fixed on the shaft O so as to be incapable of rotation with reference thereto, any frictional or other resistance applied to the shaft against its rotation will, obviously, through the shaft be applied to control the rotation of all the pulleys alike. The resistance to rotation of all the pulleys being the same, the wires passing around the pulleys to the twister will be put under exactly the same tension. With this construction and arrangement of tension devices not only will the two wires of each pair be put under equal tension, so that they will be twisted with equal tightness behind a slat and the slat will be exactly in line with the slats preceding it in the completed fence, but the several pairs of wires will be subjected to a like tension, so that no one pair can be drawn out more rapidly or easily than another, and the slats must consequently, as pushed out and twisted between the wires, be always parallel with each other.

If the pair of wires at one end of the series of twisters should be under less tension than

the others, so as to be more readily and easily drawn out in the operation of the machine, obviously the twists in such pair of wires would be looser than the other twists, and in the completed fence the spaces between the slats at their ends engaged by the wires of said pair would be liable to be greater than the spaces between their other ends.

The grooved pulleys for the two wires of each pair can be made separate and placed close together on shaft O, or a single double-grooved pulley can be used, made in one piece, and having a groove for each wire.

I do not limit myself to the use of any form of friction device or brake to be applied to the shaft O to regulate the tension on the wires, as described.

If desired the shaft can be used without any such device or brake, its ends being merely inserted in suitable bearings on the frame.

The turning of the shaft without a friction device will require pull enough on the wires to insure some tension, and as the pulleys rotate together all the wires will be fed forward an equal amount.

Journalled in suitable bearings at the outer end of the frame A A is the reel-shaft R, carrying the reel R', for reeling up the fence as completed by the machine. Upon one end of this shaft is a ratchet-wheel, R², engaged by the two pawls S S on the opposite ends of the rocking piece S', pivoted to the frame at S². A lever, S³, is attached to the piece S' for rocking the same, so as to move the pawls alternately outward and back again. The pawls are simply pivoted to the arms of the rocking piece, so as to be kept by their own weight in position to properly engage the teeth r r of the wheel R².

With the construction described, as the lever S³ is swung up and down, the pawls will alternately act by their engagement with the teeth of the ratchet-wheel to turn such wheel always in the proper direction to wind up the completed fence upon the reel.

The operation of my "clamp-shuttle" is briefly as follows: As it is swung back toward the twist-ers by the rocking of rock-shaft F and swinging of arms F' F', the fork-arms of the twist-ers engage the swinging wings or jaws H H and force them open. Such opening of the jaws causes them, as described hereinbefore, to rise bodily upward as their lower ends ride up the inclines on cams i' i'. When a slat has been inserted between the wires issuing from the twister-fork-arms, the clamp-shuttle is swung outward by rocking the shaft F, and the jaws or wings H H, being disengaged from the fork-arm ends, are caused by their own weight, or by the action of their weight and springs, where the latter are used, to ride down again over the inclined faces of the cams i' i' and be swung inward again toward each other. In this position the wings or jaws on the clamp-shuttle, being held from further swinging by lugs i' i', engage the edge of the slat between the wires squarely, and as the shuttle moves

outward carry it out into position between the wires and against the twist previously formed in the wires behind the preceding slat or picket.

Having thus described my invention, what I claim is—

1. In a clamp-shuttle for fence-machines, swinging jaws or wings, in combination with cams up over which the jaws ride as they are swung outward, substantially as and for the purpose specified.

2. In a clamp shuttle for fence-machines, in combination with the two jaws or wings pivoted so as to be capable of an up-and-down as well as a swinging movement, opposite cams adapted to engage the lower sides or ends of the jaws, substantially as and for the purpose shown.

3. In combination with a suitable supporting-frame, two swinging jaws pivoted in the frame so as to be capable of rising and falling as well as swinging, and the two oppositely-inclined cams adapted, respectively, to engage the two jaws as they are swung away from each other, substantially as and for the purpose set forth.

4. In combination with a suitable frame, two jaws pivoted on upright pivots within the frame so as to be capable of rising and falling as well as swinging, and the two opposite cams having inclined surfaces beginning close to the lower ends of the jaws when the latter are swung toward each other, and extending thence upward and outward, substantially as and for the purpose described.

5. In combination with the swinging wings or jaws, the plate having openings for the pivots of the jaws and the two oppositely-inclined cams for engaging the jaw ends, substantially as and for the purpose specified.

6. In combination with the swinging jaws pivoted so as to be capable of longitudinal as well as swinging movement, stops to limit the swing of the jaws in one direction and cams to engage and move the jaws longitudinally as they are swung in the other direction, substantially as and for the purpose shown.

7. In combination with a suitable supporting-frame, two jaws pivoted therein so as to be capable of an up-and-down as well as a swinging movement, the stops to limit the swing of the jaws in one direction, and the opposite cams to engage and cause the jaws to rise as they are swung in the opposite direction, substantially as and for the purpose set forth.

8. In combination with the swinging and rising and falling jaws, springs forcing the jaws downward and opposite cams inclined upwardly and outwardly adapted to engage the lower ends of the jaws as they are swung outward away from each other, substantially as and for the purpose described.

9. In a clamp-shuttle for fence-machines, in combination with a suitable carrying-frame, the series of jaws arranged in pairs and pivoted in the frame so that the two jaws can swing toward and from each other and also have up-

and-down movement, and cams on the frame to force the jaws of each pair upward as they are swung away from each other, substantially as and for the purpose specified.

5 10. In a clamp-shuttle for fence-machines, in combination with a suitable carrying-frame, the series of jaws arranged in pairs and pivoted in the frame so that the two jaws of each pair can swing toward and from each other and
10 also have an up-and-down movement, cams on the frame having inclines up over which the jaws of each pair must ride as they are swung outward from each other, and springs forcing the jaws downward, substantially as and for
15 the purpose shown.

11. In a clamp-shuttle for fence-machines, in combination with a suitable carrying-frame, the jaws arranged in pairs and pivoted in the frame so as to be capable of swinging and also
20 moving bodily up and down, the plates I I, one for each pair of jaws, the stops *i' i'*, and the cams *i² i²* on the plates, and the springs K K, substantially as and for the purpose set forth.

12. In a fence-machine, in combination with
25 a series of twisters and the reels of wire, the shaft and the grooved pulleys fixed thereon, around which the wires are passed on their way from the reels to the twisters, substantially as and for the purpose described.

30 13. In a tension device for fence-machines, the shaft and the series of grooved pulleys fixed

on and rotating with the shaft, substantially as and for the purpose specified.

14. In a tension device for fence-machines, 35 in combination with the shaft, the pulleys thereon, around which the wires are passed, and connections between the shaft and pulleys allowing the latter to be adjusted along the shaft, but causing them to rotate with it, sub- 40 stantially as and for the purpose shown.

15. In a tension device for fence-machines, in combination with the rotary shaft having the keyway cut along it, the series of tension-pul- 45 leys, each having a keyway, and the series of removable keys engaging the way in the shaft and the ways in the respective pulleys, sub- stantially as and for the purpose described.

16. In a fence-machine, in combination with the series of twisters and the reels for supply- 50 ing wires thereto, the rotary shaft and the grooved pulleys thereon, around which the wires pass on their way to the twisters, fixed to the shaft so as to turn with the same, but to be adjustable relatively along it, substan- 55 tially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 19th day of September, 1887.

CHARLES F. GILLET.

Witnesses:

J. V. CURBY,

W. R. BURKE