

No. 665,779.

Patented Jan. 8, 1901.

T. A. HALL.
FENCE MACHINE.

(Application filed June 13, 1900.)

(No Model.)

2 Sheets—Sheet 1.

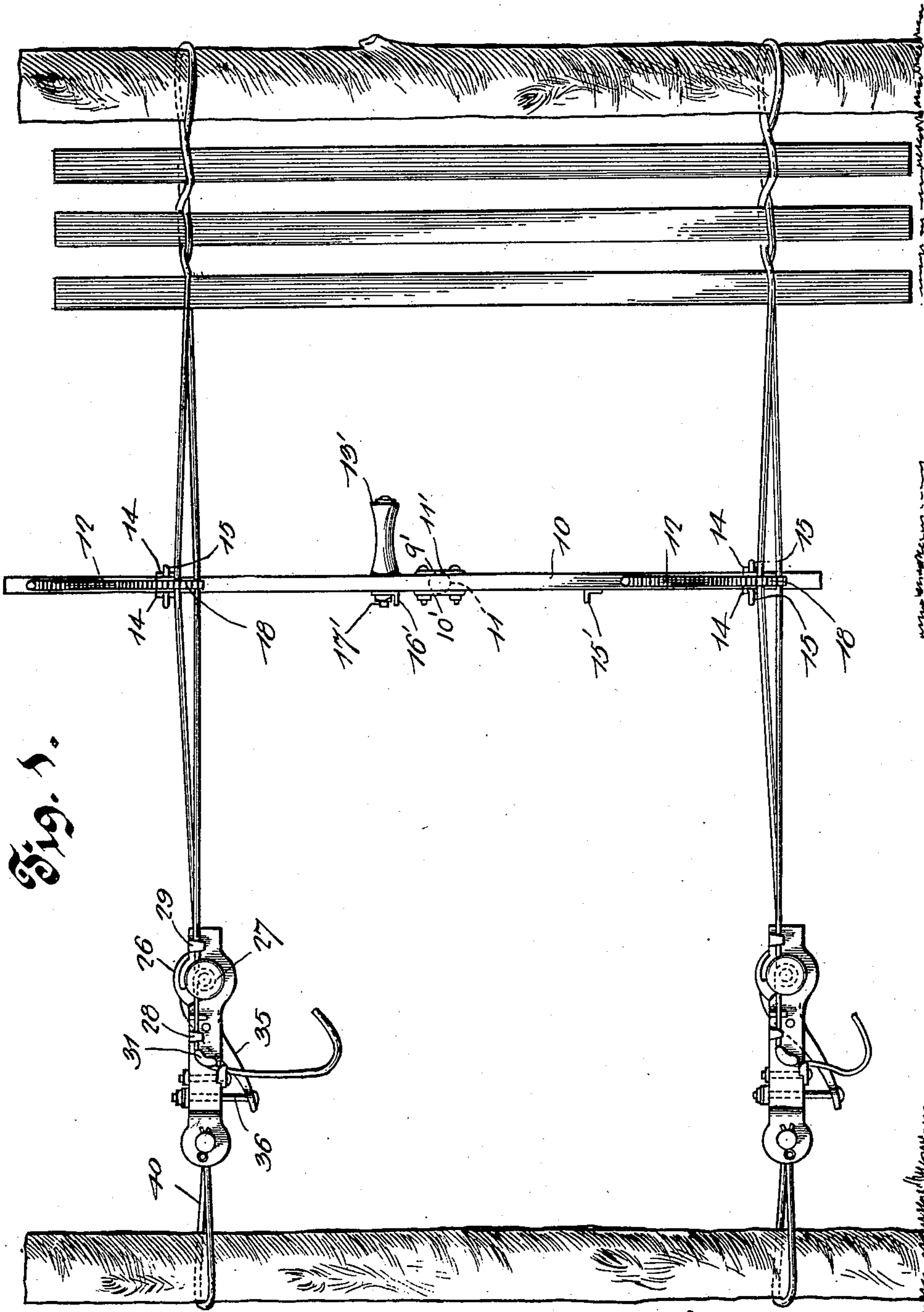


Fig. 1.

Witnesses

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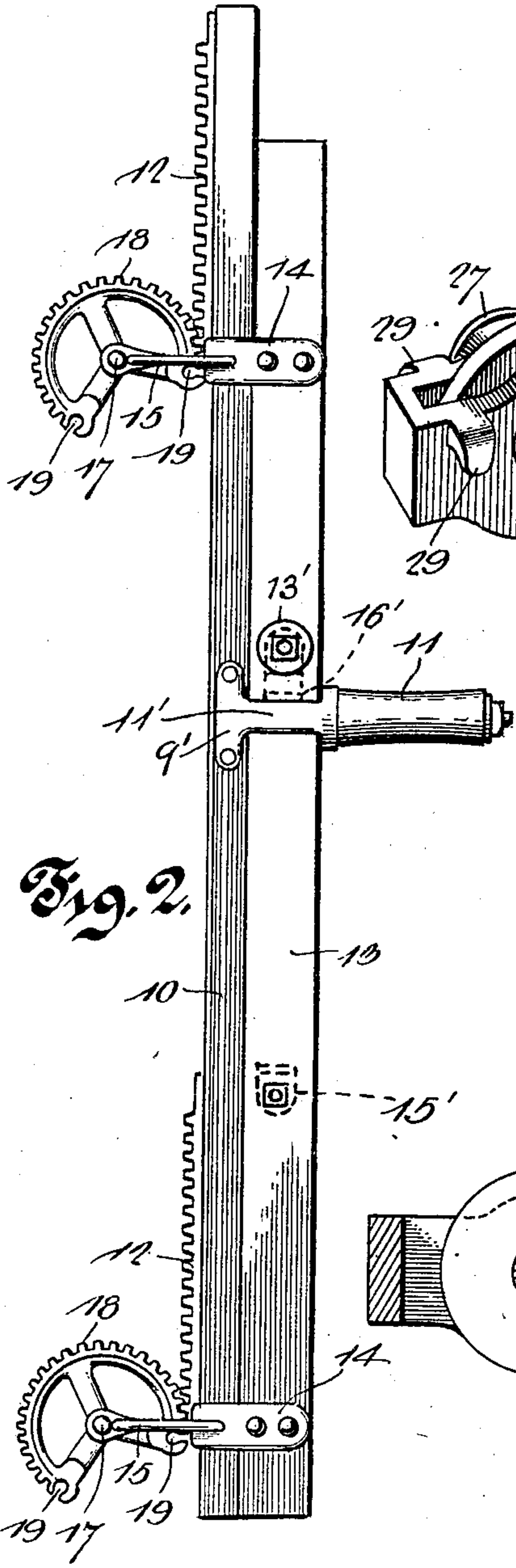


Fig. 2.

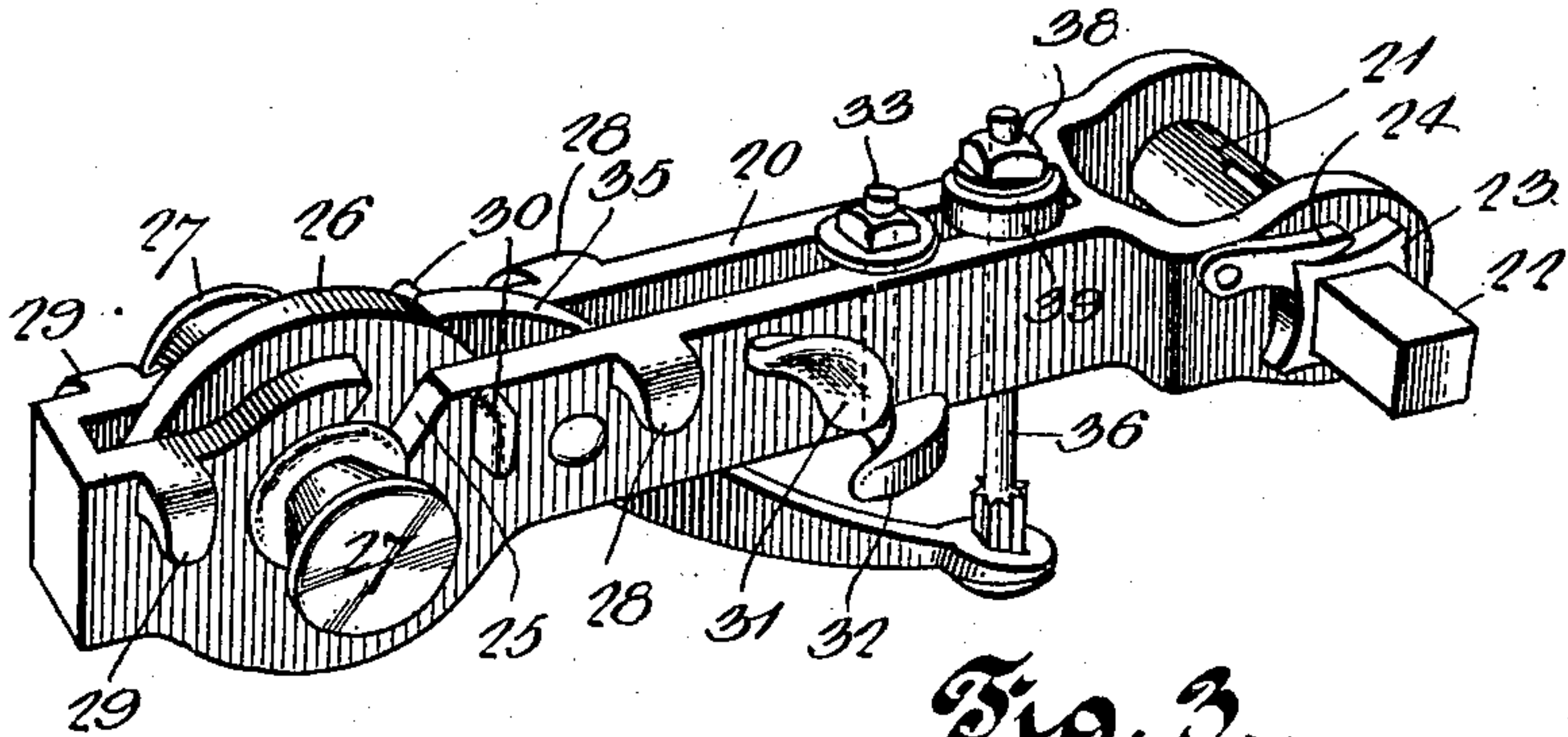
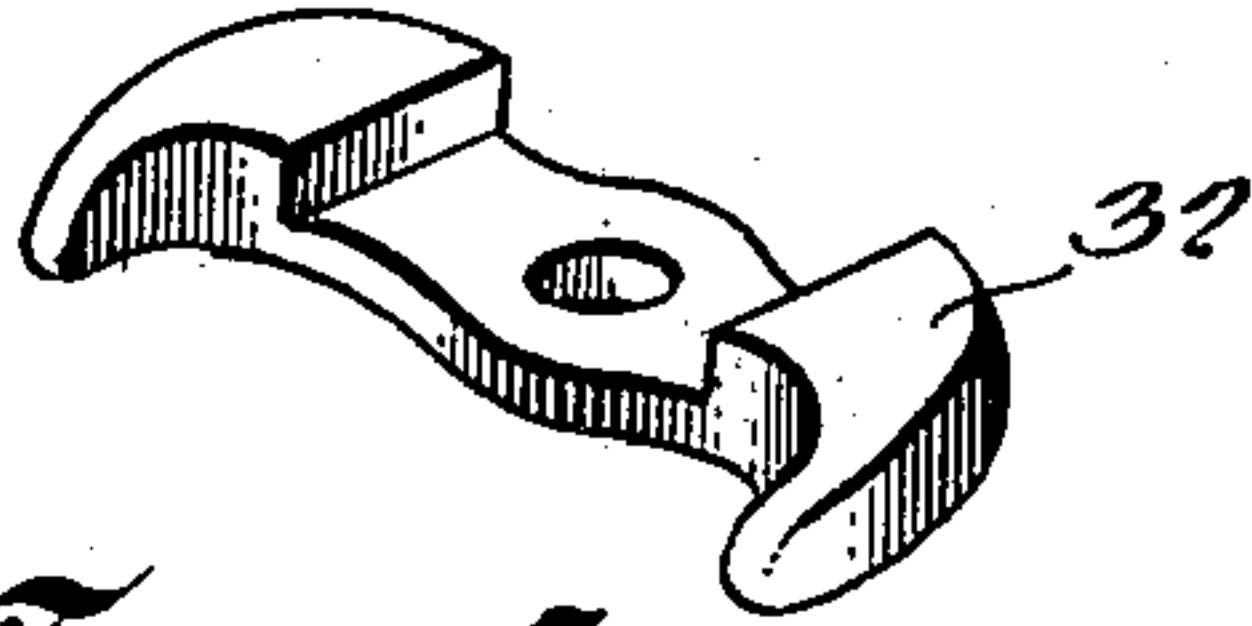


Fig. 3.



B. 19. 5.

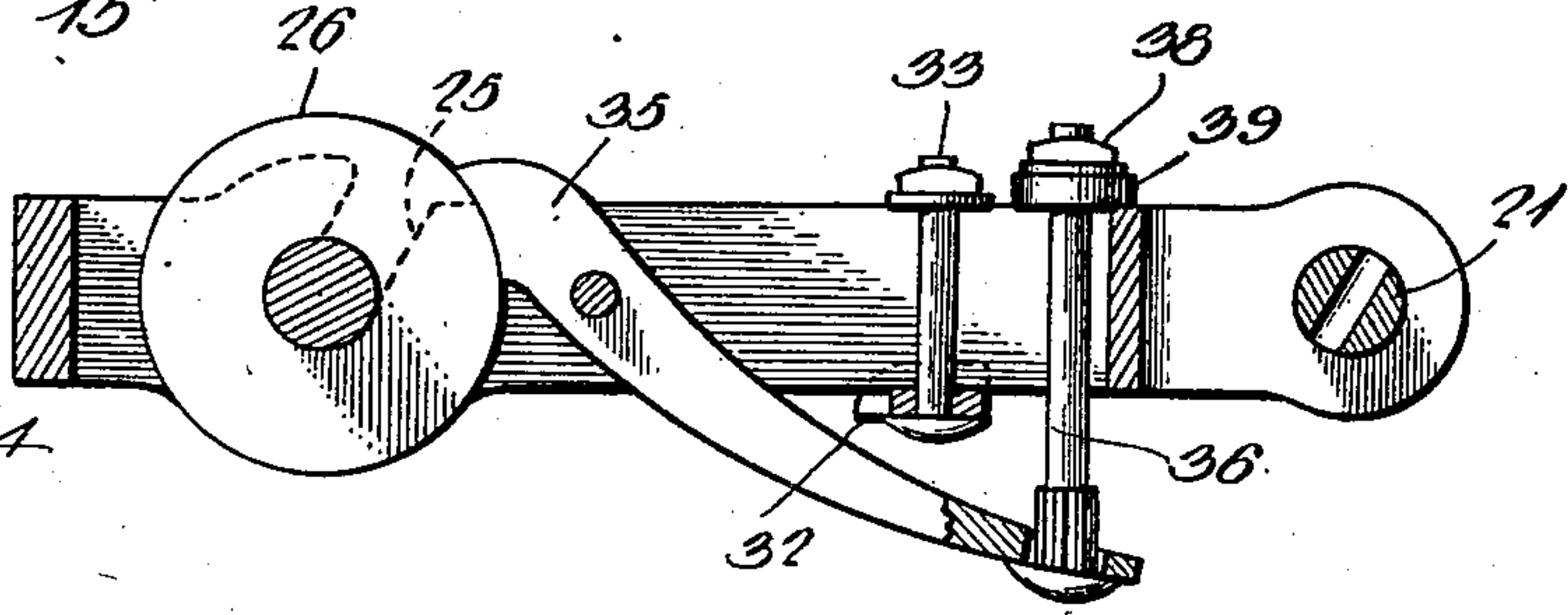


Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE

THOMAS A. HALL, OF FRENCH, TENNESSEE.

FENCE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 665,779, dated January 8, 1901.

Application filed June 13, 1900. Serial No. 20,197. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. HALL, a citizen of the United States, residing at French, in the county of Knox and State of Tennessee, have invented a new and useful Fence-Machine, of which the following is a specification.

This invention relates to fence-machines in general, and more particularly to that class designed for the manufacture of woven fences, comprising strand-wires disposed in pairs and having palings or other forms of stays secured between the wires of the several pairs by twisting the pairs of strand-wires first in one direction and then in the opposite direction.

One object of the invention is to provide a simple and efficient device for thus twisting the pairs of strand-wires to retain the stays.

A further object of the invention is to provide a simple device for tightening the wires prior to the application of the pickets or palings thereto and for increasing or diminishing the tensions of the several strand-wires as may be desired from time to time.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is an elevation showing the practical application of the mechanisms of the invention. Fig. 2 is a side elevation of the machine for twisting the strand-wires after the application of each paling. Fig. 3 is a perspective view showing the ratchet device for giving the strand-wires the proper tensions. Fig. 4 is a longitudinal sectional view taken through the frame of the tension device and showing the brake mechanism by means of which the tension of the strand-wires is regulated. Fig. 5 is a detail perspective view showing the adjustable friction-plate.

Referring now to the drawings, the twisting device is adapted for use in twisting the pairs of strand-wires after the application of each paling or picket, as above mentioned; and this device consists of a standard 13, having a handle 13', through the medium of which the standard is held against twisting movement and vertical movement during the operation of twisting the wires. A reciprocary bar 10 is disposed against the standard 13, which standard has attached thereto the ends of two U-shaped plates or guides 14, which

inclose the bar, so that the bar may be raised and lowered and yet will maintain its position with respect to the standard. From the outer ends of these guide-plates extend parallel arms 15, at the outer extremities of which are engaged shafts 17, upon which are mounted oscillatory mutilated gears 18, disposed to engage the racks 12, which are mounted upon the reciprocary bar 10 near the ends thereof. With this construction it will be seen that if the bar 10 be raised with respect to the standard 13 the gears engaged with the racks will be rotated in one direction and that if the bar 10 be then moved downwardly the mutilated gears will be rotated in an opposite direction, the reciprocation of the bar oscillating the gears. At the ends of the segments of the gears are formed slots 19, which receive the strand-wires of a pair, and thus as the gears are oscillated the pairs of strand-wires are given a half-twist first in one direction and then in the other.

A U-shaped plate 11' is disposed to straddle the standard 13 and with its broadened ends 9' and 10' against the bar 10, to which they are bolted, the U-shaped plate having a handle 11, secured to the web portion thereof, as shown. Thus by grasping handle 13' the standard may be held securely while the handle 11 may be operated to reciprocate the bar 10. In order to limit the movement of the bar 10 with respect to the standard, stops 15' and 16' are employed, and each consists of a small angle-plate bolted to the face of the standard and lying in the path of movement of one arm of the plate 11'. In the present instance the stop 16' is shown as held in place by means of the bolt 17', which forms the core of the handle 13'.

In practice the strand-wires are secured in pairs upon the posts, as shown in Fig. 1 of the drawings, and there is one of these mutilated gears for each pair of strand-wires. The handle 11 of bar 10 is raised to move the wires in one direction, after which a paling is applied, and then the bar is lowered to twist the wires in the opposite direction, and then another paling is applied, this operation being continued until the entire fence is completed.

It is of course necessary that during the op-

eration of applying the palings the wires be held with a certain degree of tension and also that inasmuch as the twisting of the wires takes up the slack thereof there must be some means provided for slacking up the wires during the operation, and for these purposes there is provided a device comprising a ratchet and a wire-grip, the ratchet being used for giving the proper tension initially to the wires and the grip being used for holding the wires to the ratchet and to permit them to slip when the tension thereof has exceeded a predetermined amount. This combined ratchet and tension device consists of a frame 20, which is substantially rectangular and at one end of which are formed two parallel ears having bearings therein to receive the end portions of a winding-drum 21, which has a squared end 22, projecting beyond one of the ears to receive a crank-handle or other rotating device. At the base of this squared end is formed a ratchet-wheel 23, with which co-operates a pivoted gravity-pawl 24, which by engagement with the ratchet prevents return movement thereof. At the opposite end of the frame 20 from the drum 21 and in the sides of the frame are formed downwardly and forwardly ranging slots 25, which form bearings for the spindle of a friction-wheel 26, which lies within the inclosure of the frame 20, and upon the ends of the spindle and exterior to the frame are formed winding-drums 27.

Downwardly-curved lugs 28 and 29 are formed upon the exterior faces of the sides of the frame 20 and at opposite sides of the spindle of the friction-wheel; the lugs 28 lying between the spindle and the winding-drum 21, and between these lugs 28 and the drums 27 are formed outwardly-directed webs 30. At the opposite sides of the lugs 28 from the webs 30 there are formed arc-shaped lugs 31, which are grooved in their upper faces, the lower concaved faces of the lugs 28 lying below a line at each side of the frame and including the uppermost points of the concaved faces of lugs 31 and lying tangent to the winding-drums. Thus a wire may be wound around each winding-drum and be then continued therefrom at the upper side of the drum and then taken across the vertical face of the corresponding web 30, under the lug 28, then upwardly and over the lug 31, and then downwardly against the concaved face of the latter. From the lug 31 the wire is passed again against a friction-plate 32, which is disposed against the under side of the frame 20 and is recessed to receive the frame, the projecting ends of the friction-plate being curved in the direction of the end of the frame beyond lugs 31. This friction-plate 32 is held adjustably in place by means of a bolt 33, which is passed therethrough and upwardly between the sides of the frame 20, and is provided with a terminal nut which rests against the upper side of the frame. By this means the friction-plate may be adjusted toward and away from the lugs 31 to bend the wires

more or less around the lugs, so as to vary the resistance of the wires to being pulled around the lugs.

As shown in the drawings, one of the members of a pair of strand-wires is wrapped around each of the winding-drums 27, the free end of the wire being then taken under lug 28 and over lug 31 and in contact with the friction-plate. Thus in order for the wires to give they must slip with respect to the several lugs and must rotate the friction-wheel 26. Therefore by retarding the movement of the friction-wheel the slip of the wire may be retarded and the wires may be maintained at the proper tension during the operation of the formation of the fence. To retard the rotation of the friction-wheel 26, a brake-lever 35 is pivoted between the sides of the frame 20 and has a friction-surface which contacts with the periphery of the friction-wheel, the opposite end of the lever being continued below the frame and having a vertical perforation in which is engaged a bolt 36, which is passed upwardly through the frame and has an adjusting-nut 38 at its upper end, a yieldable washer 39, of rubber or other suitable material, being disposed upon the bolt between the nut and the frame. Thus by adjusting the nut the brake-lever is adjusted and the tension at which the wires are held is varied.

To hold the several tension devices in operative positions, a loop 40 of wire is passed around the end post for each of the tension devices and the ends of these loops are engaged with and wound upon the winding-drums 21.

It will be understood that in practice various modifications of the constructions shown may be made and that any suitable materials and proportions may be used for the various parts thereof without departing from the spirit of the invention.

What is claimed is—

1. A fence-machine comprising an upright or standard, guide-plates secured to the standard, a reciprocatory bar engaged with the guide-plates slidably, arms upon the guide-plates extending beyond the racks, mutilated gears rotatably mounted at the ends of the arms, racks carried by the bar and with which the gears are engaged, said gears having recesses at their ends to slidably receive wires, and a handle having a bifurcated end, the legs of which pass around the standard and are attached to the bar to reciprocate the bar and form a guide upon the standard, said standard having stops in the path of movement of the bifurcated portion of the handle to limit the reciprocatory movement of the bar.

2. In a fence-machine, a tension device comprising a frame having a winding-drum at one end provided with a ratchet mechanism, a friction-wheel having a spindle rotatably mounted in the opposite end of the frame, winding-drums upon the spindle, lugs disposed for engagement by wires wound upon

the drums and extending therefrom, and a lever pivoted in the frame and disposed in contact with the friction-wheel and having means for varying its frictional contact with the wheel.

3. A tension device comprising a frame having a winding-drum provided with ratchet-retaining means, a friction-wheel mounted in the frame, drums connected with the wheel to rotate therewith, lugs disposed on opposite sides of the last-named drums and adapted for engagement of the ends of wires which are wound upon the drums, an adjustable friction-plate disposed adjacent to certain of the lugs to press the wires thereagainst, and means for engagement with the friction-wheel to vary the resistance thereof to rotation.

4. A tension device comprising a frame having a winding-drum provided with ratchet-retaining means, a friction-wheel mounted in the frame and having winding-drums attached thereto to receive wires, lugs disposed to receive the wires from the last-named drums, a friction-plate disposed adjacent to certain

of the lugs and adapted for adjustment to move the wires thereagainst to increase the friction against said lugs, a lever pivoted in the frame and disposed in contact with the friction-wheel, and an adjusting-bolt engaged with the lever and frame to vary the pressure of the lever against the friction-wheel.

5. A tension device for fence-machines comprising a frame having a winding-drum provided with retaining means, a spindle mounted in the frame and provided with a friction-wheel, means for engagement with the wheel to vary its resistance to rotation, winding-drums carried by the spindle for rotation with the friction-wheel, and lugs at opposite sides of said drums to receive the ends of the wires therefrom.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

THOMAS A. HALL.

Witnesses:

W. A. J. MOORE,

J. A. COOPER.