(No Model.) 4 Sheets—Sheet 1.

# P. A. TERRELL.

## WIRE BARBING MACHINE.

No. 297,472. Patented Apr. 22, 1884.

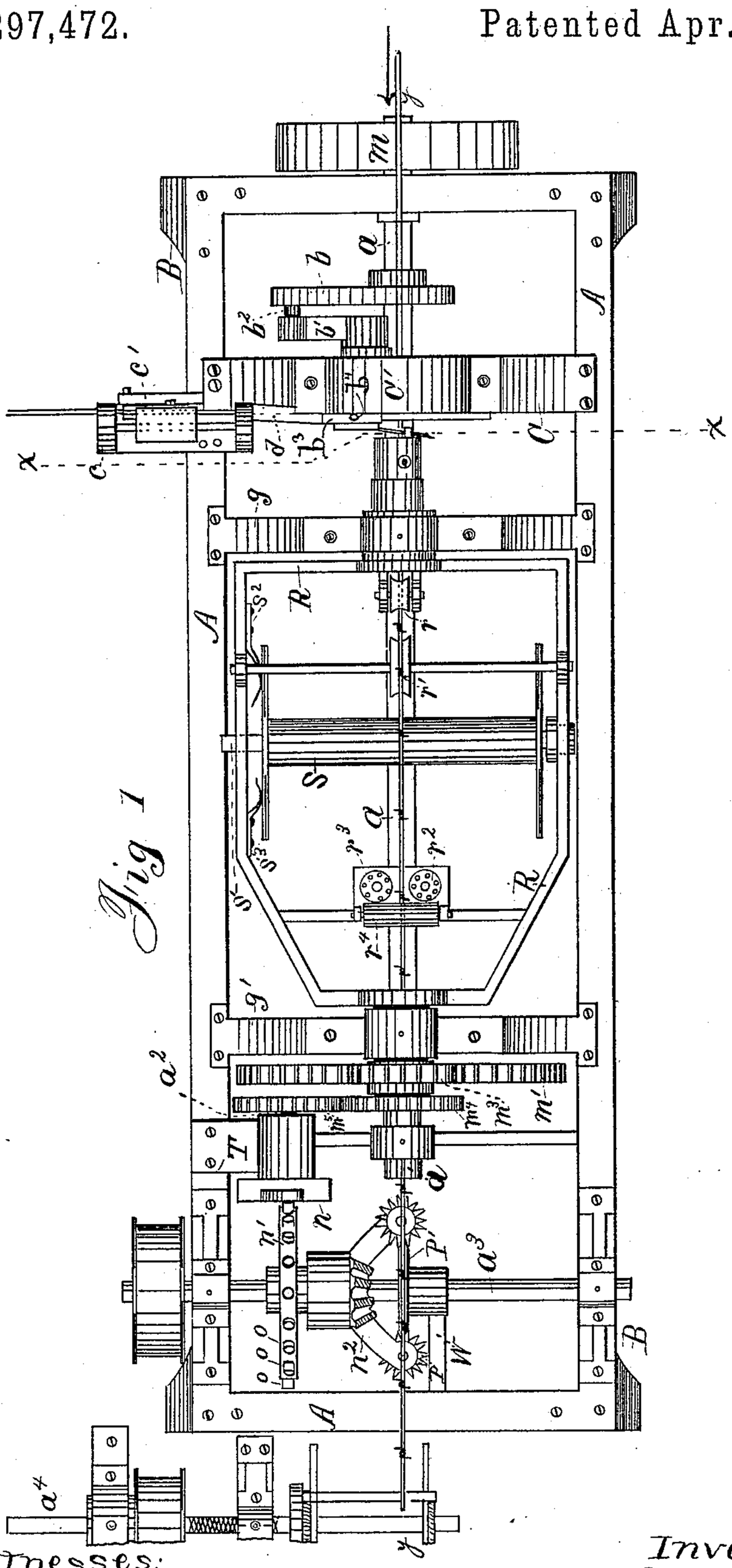

Fig 1

Witnesses:
Gilbert Douglass
Geo. Weaver

Inventor:
Pleasant A. Terrell
By James H. Coon
Attorney

(No Model.) 4 Sheets—Sheet 2.

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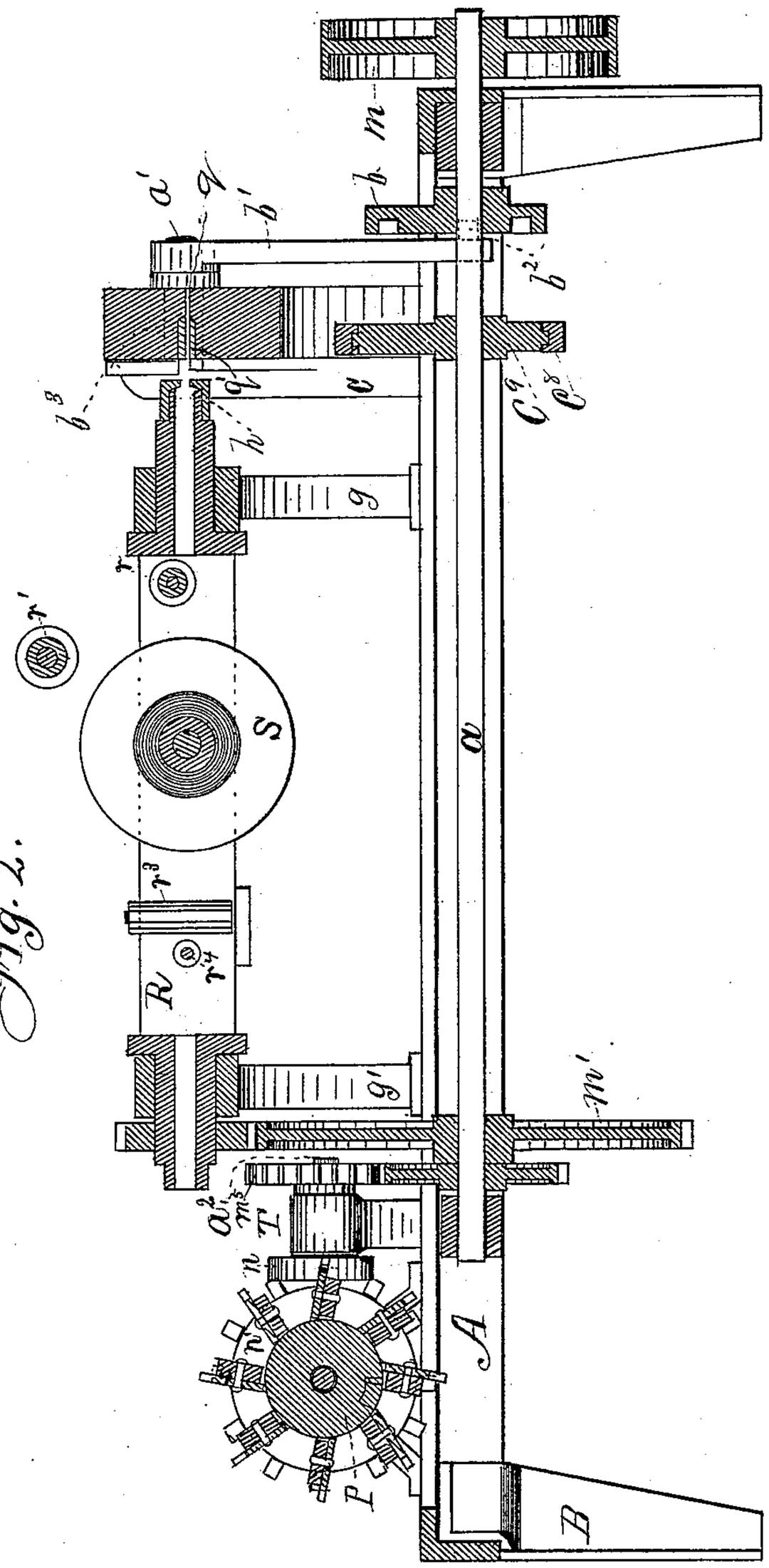
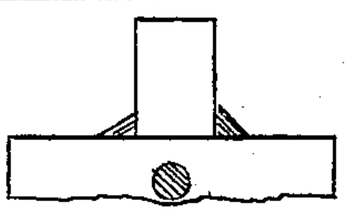



Fig. 2.



Witnesses:
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(No Model.)

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# P. A. TERRELL.

## WIRE BARBING MACHINE.

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Fig. 3

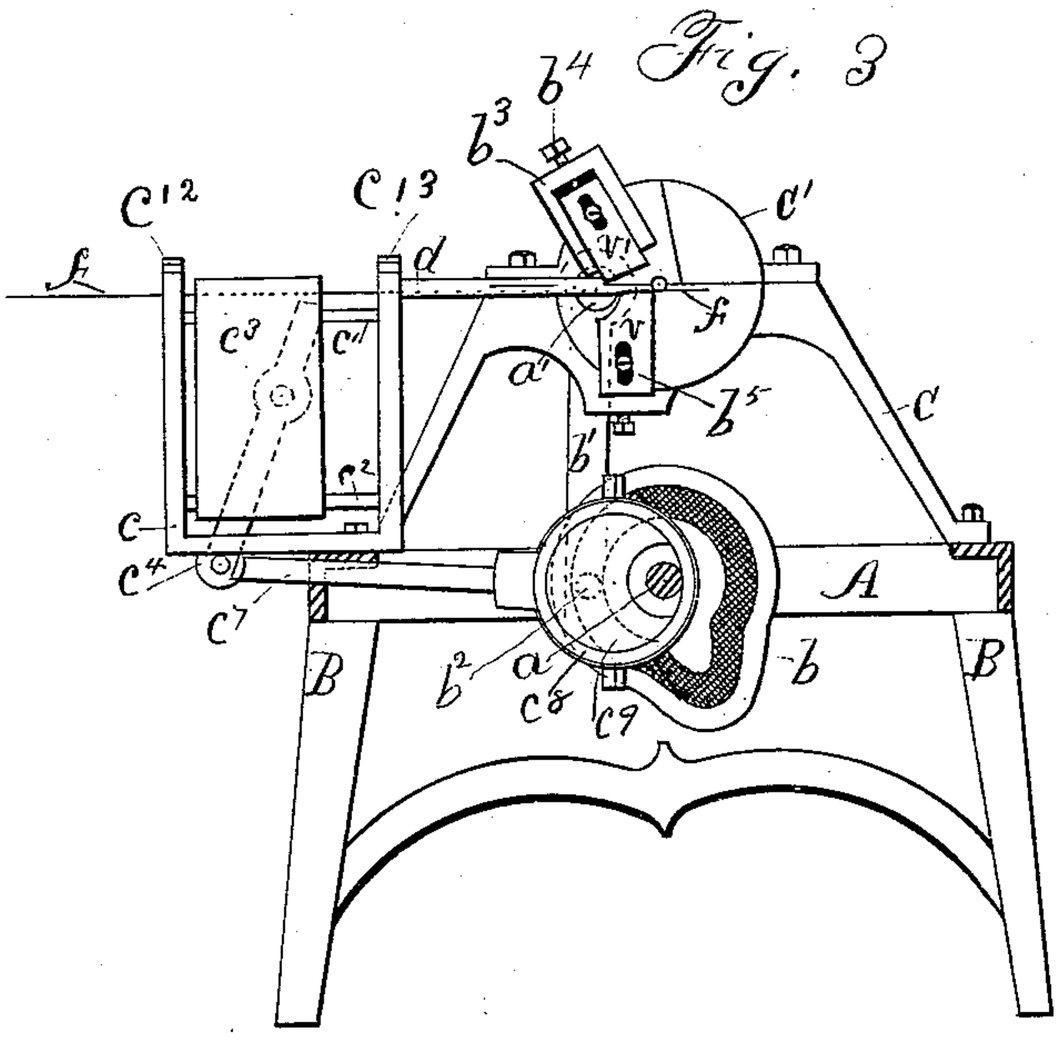



Fig 4

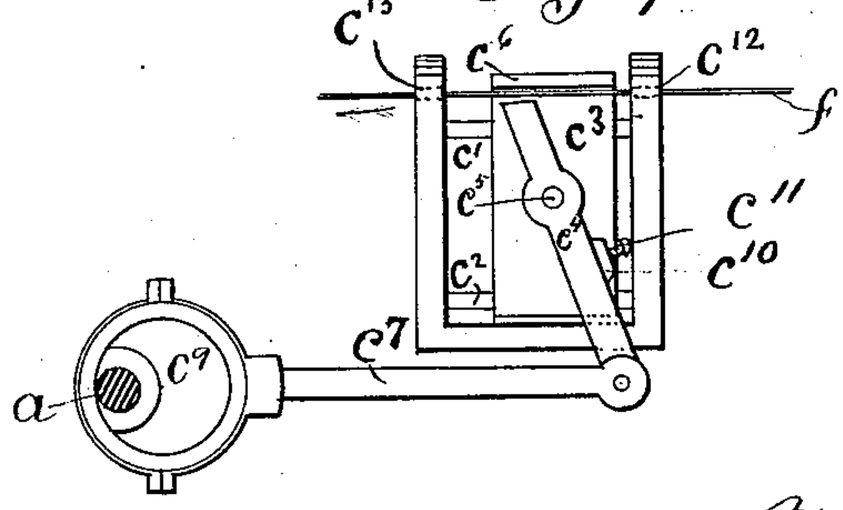



Fig. 6

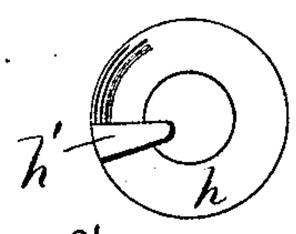



Fig. 7

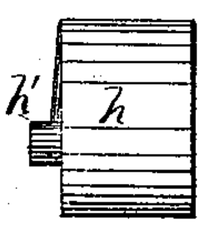



Fig. 8

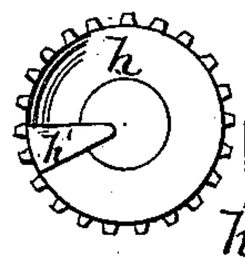



Fig. 9

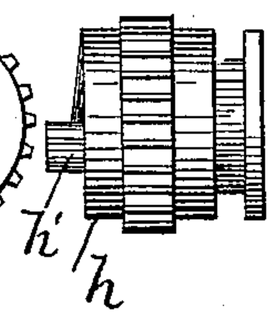
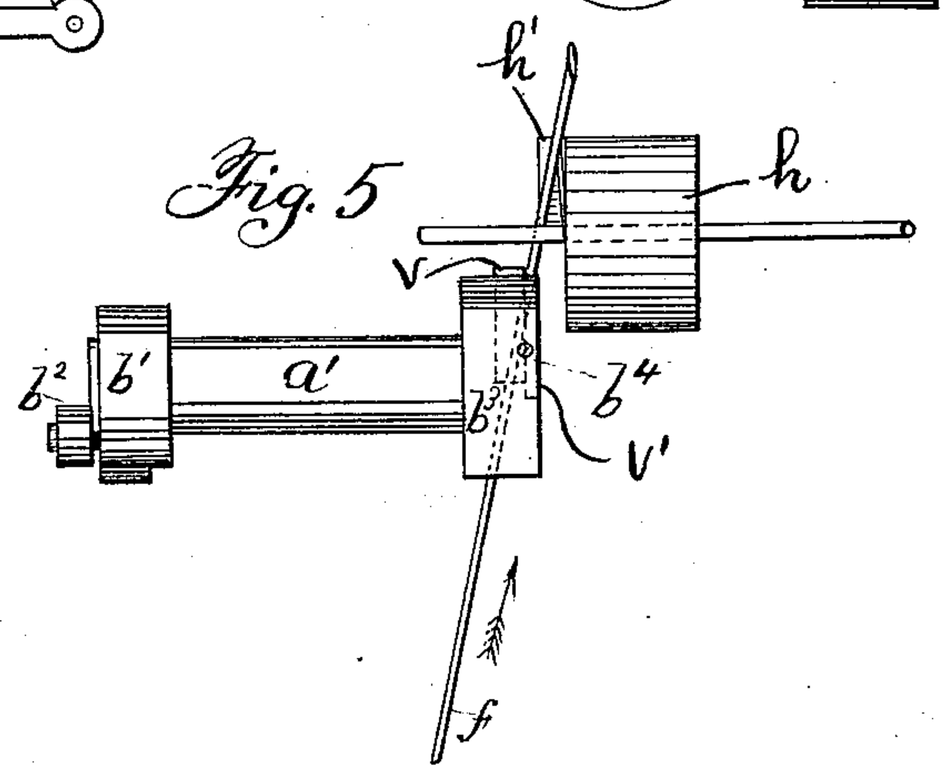



Fig. 5




WITNESSES:

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Geo. Weaver

INVENTOR

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ATTORNEY

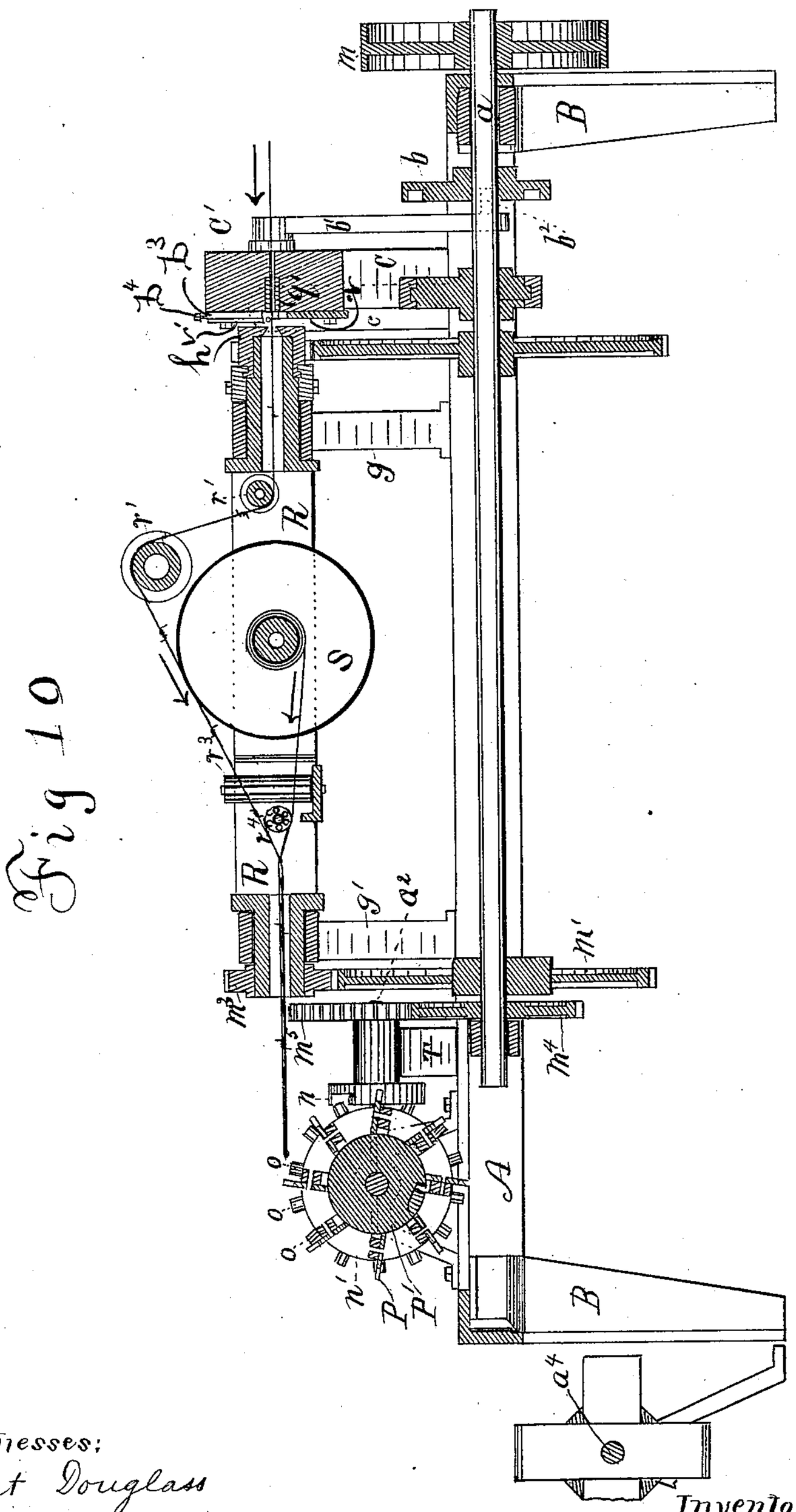
(No Model.) 4 Sheets—Sheet 4.

# P. A. TERRELL.

## WIRE BARBING MACHINE.

No. 297,472. Patented Apr. 22, 1884.

Fig 1.




Witnesses:
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Geo. Weaver

Inventor
Pleasant A Terrell
By: James H. Coon Attorney

# UNITED STATES PATENT OFFICE.

PLEASANT A. TERRELL, OF GRINNELL, ASSIGNOR OF ONE-HALF TO JAMES H. COON, OF DES MOINES, IOWA.

## WIRE-BARBING MACHINE.

SPECIFICATION forming part of Letters Patent No. 297,472, dated April 22, 1884.

Application filed August 27, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, PLEASANT A. TERRELL, a citizen of the United States, residing at Grinnell, in the county of Poweshiek and State of Iowa, have invented a new and useful Improvement in Wire-Barbing Machines, of which the following is a specification.

My invention relates to wire-barbing machines, and more particularly to that class in which a two-pointed-wire barb is applied to one strand of fence-wire, and said strand is twisted with a plain wire to produce barbed cable fence-wire; and the invention consists in the novel constructions, combinations, and arrangement of parts, hereinafter fully described, and specifically pointed out in the claims.

Figure 1 is a plan view of my improved machine. Fig. 2 is a vertical longitudinal section on line *y y* of Fig. 1. Fig. 3 is a vertical cross-section on line *x x* of Fig. 1. Fig. 4 is an elevation of the barb-feeding mechanism, looking from the opposite direction to that shown in Fig. 3. Fig. 5 is a detail plan view of the barb-cutting and barb-coiling devices, as hereinafter more fully described. Figs. 6 and 7 are enlarged views of the barb-coiling device attached to and rotated by the twister-frame. Figs. 8 and 9 are like views of the barb-coiling device, which may be mounted on the end of the twister-frame journal, and operated at a different speed from the twister, as hereinafter fully described. Fig. 10 is a vertical longitudinal section, showing coiling-wheel *h* in a modified form, mounted on the twister, and secured thereto by suitable clamping-pieces, so that it may be rotated at any suitable speed, by a gear-wheel secured on the main driving-shaft.

In Fig. 1, A A is a skeleton frame employed as a bed-plate, supported by suitable legs, B B, and on this bed-plate are mounted the barb-feeding mechanism, the barb-coiling and cabling mechanism, and the shafting for operating the same, also the mechanism for feeding forward the fence-wires at regular intervals.

C is a standard attached to the bed-plate, and forms a support for the fixed cutting-tool *v*, and for the wire-guide *d*, employed to guide the barb-wire from the barb-feeding device to its proper position with reference to the cutting-tools and the main fence-wire.

C′ is a cap secured to C, and in connection with the latter forms a bearing for the rock-shaft *a′*. Through C and C′, as shown in Fig. 2, there is provided an opening, *q*, in which a hardened-steel wire-guide, *q′*, is secured to guide the strand of wire which is to be barbed.

The barb-feeding mechanism consists of the eccentric $c^9$ secured on the main driving-shaft *a*, the eccentric-straps $c^8$, the arm $c^7$, the lever $c^4$, pivoted to sliding block $c^3$ at $c^5$, the flange $c^6$ on said block, the guide-rods $c'$ $c^2$, and the skeleton frame or standard *c*, rigidly attached to the bed-plate. The operation of the barb-feeding mechanism is as follows: The barb-wire is passed through openings in the standard $c^{12}$ $c^{13}$, and into the wire-guide *d*, thence forward on a curved line, as indicated by dotted line in Fig. 1. When main shaft *a* revolves, the eccentric operates the arm $c^7$ and draws the lower end of lever $c^4$ in toward the cutting-tools. When the lever has oscillated a short distance, the upper end comes in contact with the barb-wire, and clamps the same firmly against the flange $c^6$. As the movement of the eccentric continues, the block $c^3$, together with the barb-wire thus held, is carried forward on the rods $c'$ $c^2$ and the barb fed in a distance as required to form a barb. While the barb is being coiled on the fence-wire and before the barb-wire is severed, the eccentric throws the lever back and frees the upper end from the barb-wire. The lower portion of the lever will now engage the end of a set-screw, $c^{11}$, secured in a lug projecting from and made integral with $c^3$, and then forces the sliding block $c^3$ back to its original position, ready to repeat the movement described. It will be observed that the free movement of lever $c^4$ allows the sliding block to be at rest for a short time at the end of each thrust of the arm $c^7$, and by increasing or diminishing this period of rest, by the set-screw $c^{11}$, the throw of sliding block $c^3$, and consequently the length of the barb, may be regulated as desired. Sliding block $c^3$ reciprocates in a line at right angles to the direction of the passage of the main fence-wire, and the opening in the guide through which the barb-wire passes is slightly

curved, to direct the barb-wire across the main wire at an oblique angle, so that the free end of the barb-wire, as it is being coiled around the fence-wire, will not impinge upon that portion of the barb-wire which extends from the main wire back to the cutting-tools.

The movable cutting-tool *v* is secured in a head, $b^3$, made integral with shaft *a'*, and is operated by oscillating the shaft by cam-wheel *b*, secured to main driving-shaft *a*, through the cam-groove, stud, and roller $b^2$ and crank *b'*. When the lower end of the crank-arm is carried out by the cam, the upper cutting-tool is oscillated inward and down upon the barb-wire. As the motion continues, the barb-wire, is severed and the free end of the barb-wire rests upon the upper end of the lower cutter, and the barb attached to the fence-wire and just severed is carried a short distance down in front of the stationary cutting-tool, and is free to advance forward toward the receiving-reel.

R is a rotating twister having hollow journals at each end, adapted to pass the barbed wire, mounted in bearings *g g'*, over the bed-plate.

S is a spool mounted in the axis of revolution of the twister-frame, and secured in position by a bolt, *s'*, and supplied with proper tension by pressure between the head of the bolt on one side and springs $s^2$ $s^2$ on the other side, in the usual manner.

*r r'* $r^2$ $r^3$ $r^4$ are guide-wheels employed to direct the barbed strand around the spool of plain wire, and to guide the same through the hollow journals of the twister. The twister is rotated by the gear-wheels *m'* and $m^3$, the former secured on the main shaft *a*, and the latter on the forward end of the twister.

*h* is a barb-coiling head attached to the rear end of the twister by a cap-screw, as shown in Fig. 1. As the twister is rotated, the barb-coiling lug *h'* at the proper time engages the end of the barb-wire projected across the fence-wires, and carries it around the fence-wire. As the process of coiling the barb upon the fence-wire continues, the free end of the barb-wire is gradually shortened until the end projects from the fence-wire just sufficient to form a barb. It will then pass freely through the opening in the end of the coiling-wheel. When it is desired to place the barbs very close together on the fence-wire, it is desirable to give the coiling-head a more rapid motion than the twister. I then employ coiling-wheel *h* as modified in Figs. 9 and 10, instead of *h* as shown in Figs. 2, 6, and 7, and secure it to the end of the twister by the annular groove and flanged caps $k^2$, as shown in Figs. 9 and 10, and rotate the wheel by a gear-wheel, $k^3$, on the main shaft *a*. The main wires are twisted into a cable near the forward end of the twister immediately after passing guide-wheel $r^4$, and are carried forward at regular intervals by the feed-drum $n^2$, mounted on shaft $a^3$, secured in bearings attached to the bed-plate. $a^2$ is a short shaft mounted in a bearing, T, secured to the bed-plate, and carries a gear-wheel, $m^5$, and cam-wheel *n*. This shaft is rotated by gear-wheel $m^4$ on main shaft *a* through $m^5$, its mating gear. Cam *n* is employed to rotate the drum at regular intervals as required to advance the main wires.

*n'* is a wheel securely attached to the bars of the drum, and has on its face a series of pins and friction-rollers equidistant from each other. Cam *n* has a groove adapted to engage one of these pins at a time, and a flange adapted to rotate the wheel a distance equal to the pitch of the pins at each revolution of the cam.

Drum $n^2$ consists of a series of arms, each arm having a toothed wheel pivoted thereto and allowed to rotate on the pivot. A cam, P', is placed on shaft $a^3$, but prevented from rotating thereon by an arm, *w*, rigidly attached to the bed-plate. This cam is arranged to engage the toothed wheels P, and, as they pass around under the shaft $a^3$, to rotate them, respectively, through an arc equal to the pitch of the teeth. The cable-wire passes once around this drum, resting in the notches of the wheels P, and, by reason of the rotary motion given said wheels, when the barbed cable comes up on the inside of the drum next to the twister it will not come in contact with the advancing cable, but will lie in the adjacent notches of wheels P and pass freely forward to the receiving-spool. The receiving-reel is attached to a distributing-shaft, $a^4$, secured in suitable bearings, and operated in the usual manner, and driven by a belt and flanged pulleys, as shown in Fig. 1. As I make no claim to this device, and it is well known in the art to which my invention pertains, no further description is here necessary. The barb-wire and the wire which is to be barbed may be mounted upon brackets secured to the bed-plate, or on independent supports, as desired.

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

1. The barb-feeding mechanism consisting of the eccentric $c^9$, arm $c^7$, lever $c^4$, and sliding block $c^3$, and means for operating said device, substantially as described.

2. The combination of eccentric $c^9$, arm $c^7$, lever $c^4$, sliding block $c^3$, having the lug $c^{10}$, flange $c^6$, and adjusting-screw $c^{11}$, substantially as and for the purpose set forth.

3. The barb-cutting mechanism consisting of cam *b*, arm *b'*, oscillating shaft *a'*, made integral with head $b^3$, and cutting-dies *v'* and *v*, with means for operating said cam, substantially as described.

4. The rotating twister R and coiling-wheel *h*, mounted on the twister, in combination with the barb-feeding and barb-cutting devices, and means for rotating the twister, and means for actuating the barb-feeding and barb-cutting devices, substantially as described.

5. The rotating twister R, barb-coiling wheel *h*, mounted on the twister, and the barb-feeding and barb-cutting mechanisms, in com-

bination with the drum $n^2$, and means for actuating all the said several devices, substantially as and for the purpose specified.

6. The rotating twister R and barb-coiling wheel *h*, mounted on the twister, with means for rotating each of said devices at different speeds, in combination with mechanism for feeding and cutting the barb-wire, substantially as described, and for the purpose set forth.

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Witnesses:

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GEO. WEAVER.