

(No Model.)

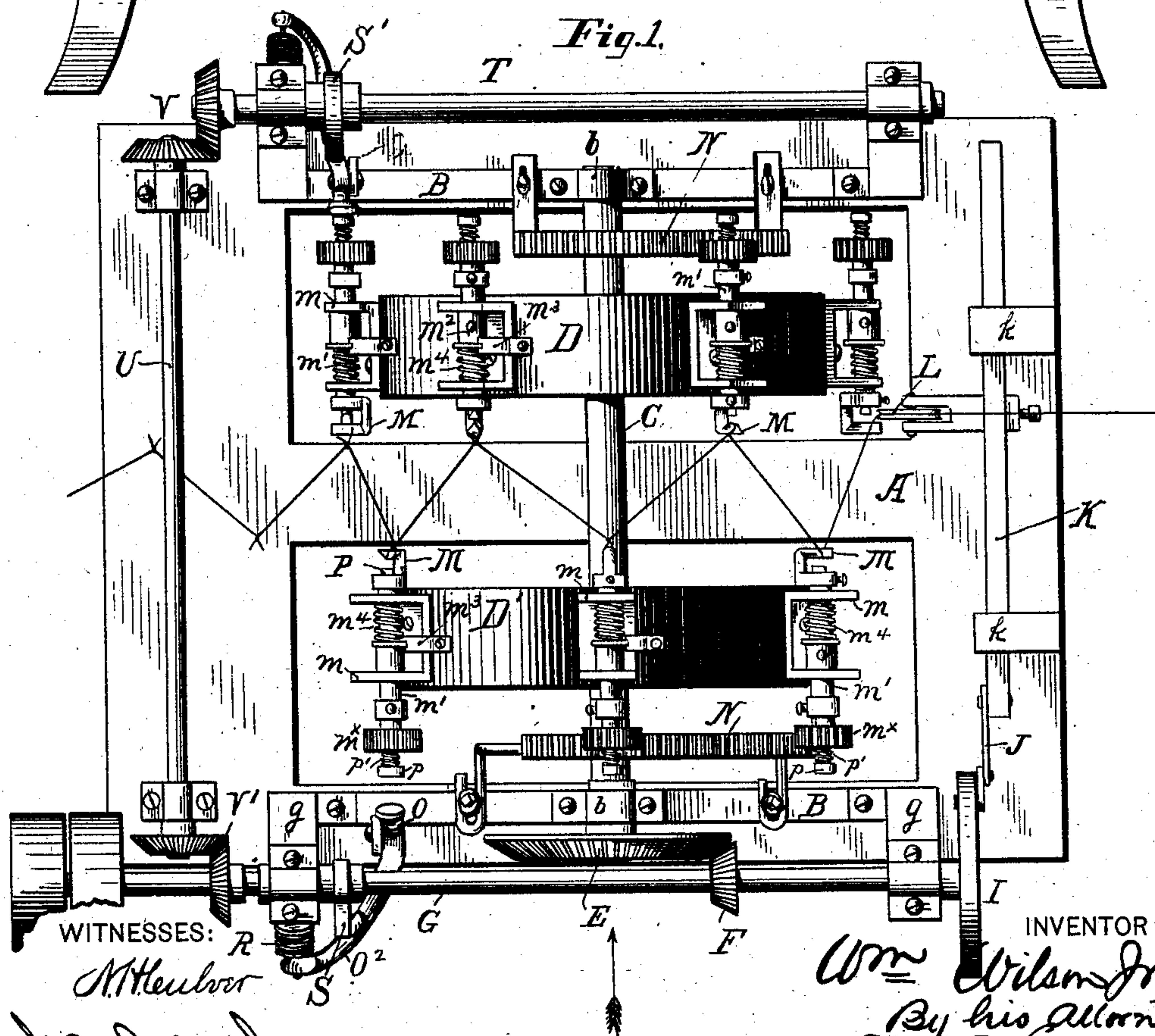
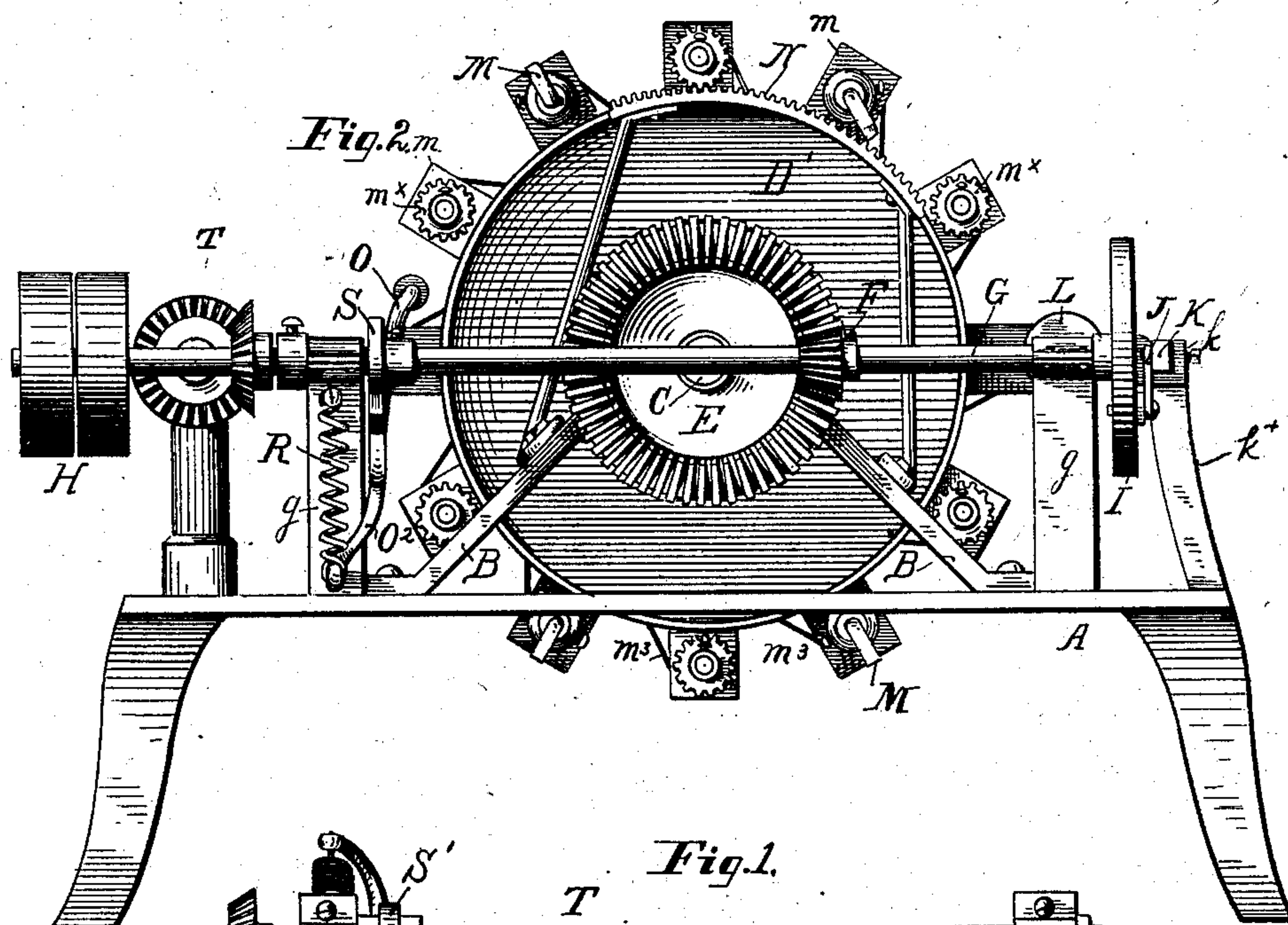
2 Sheets—Sheet 1.

W. WILSON, Jr.

APPARATUS FOR MAKING BARBED FENCE WIRE.

No. 289,950.

Patented Dec. 11, 1883.



WITNESSES:

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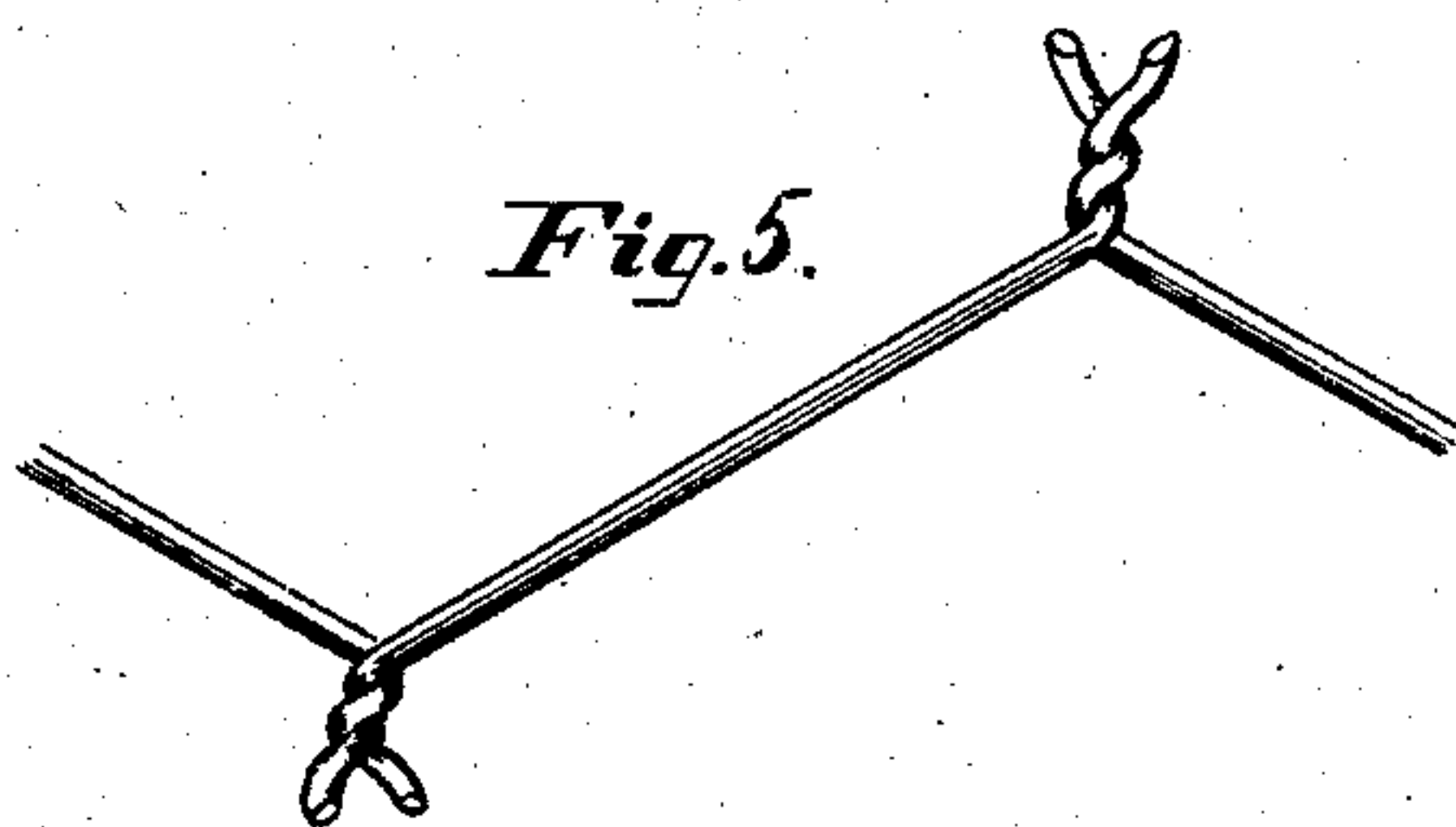
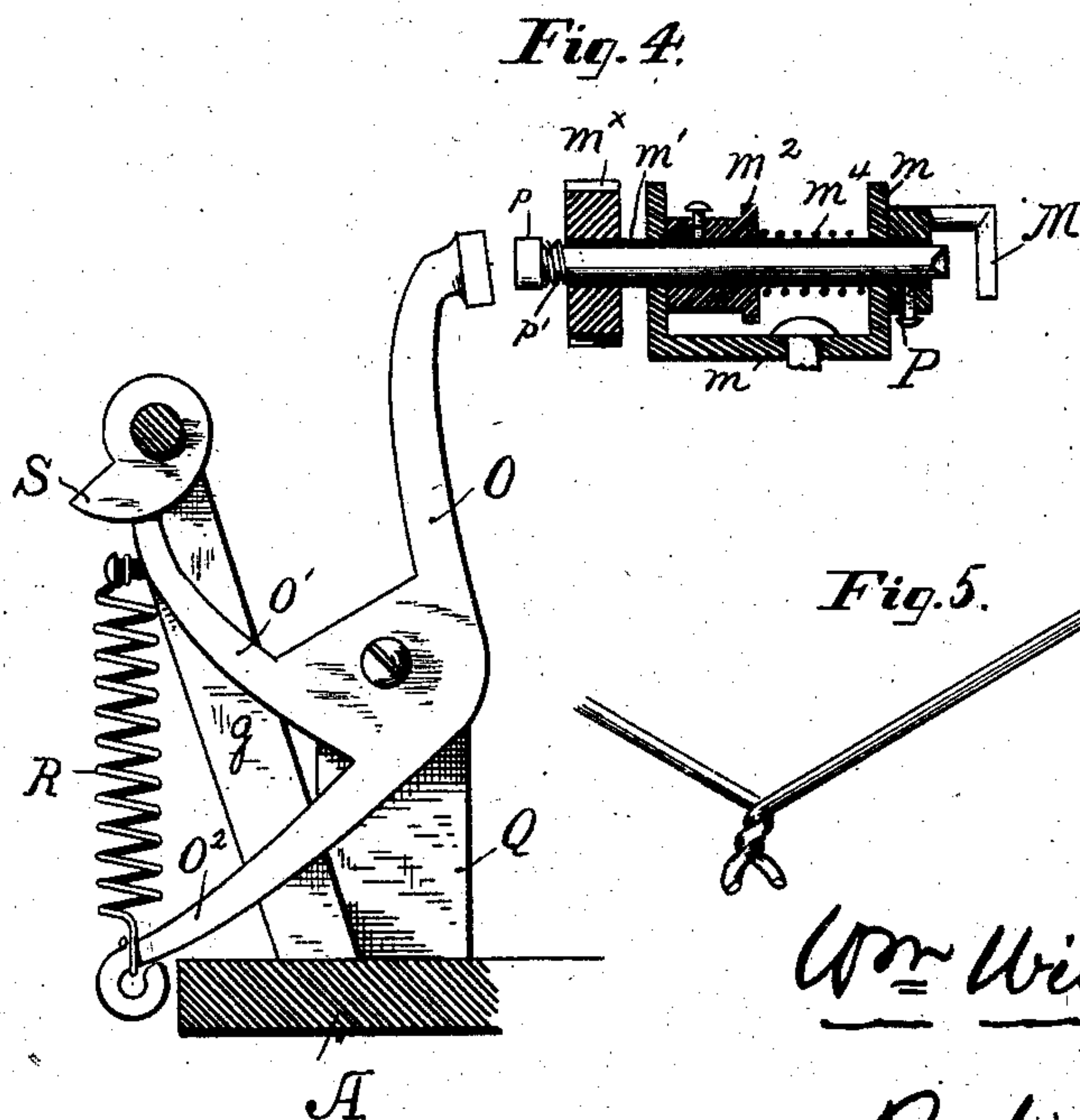
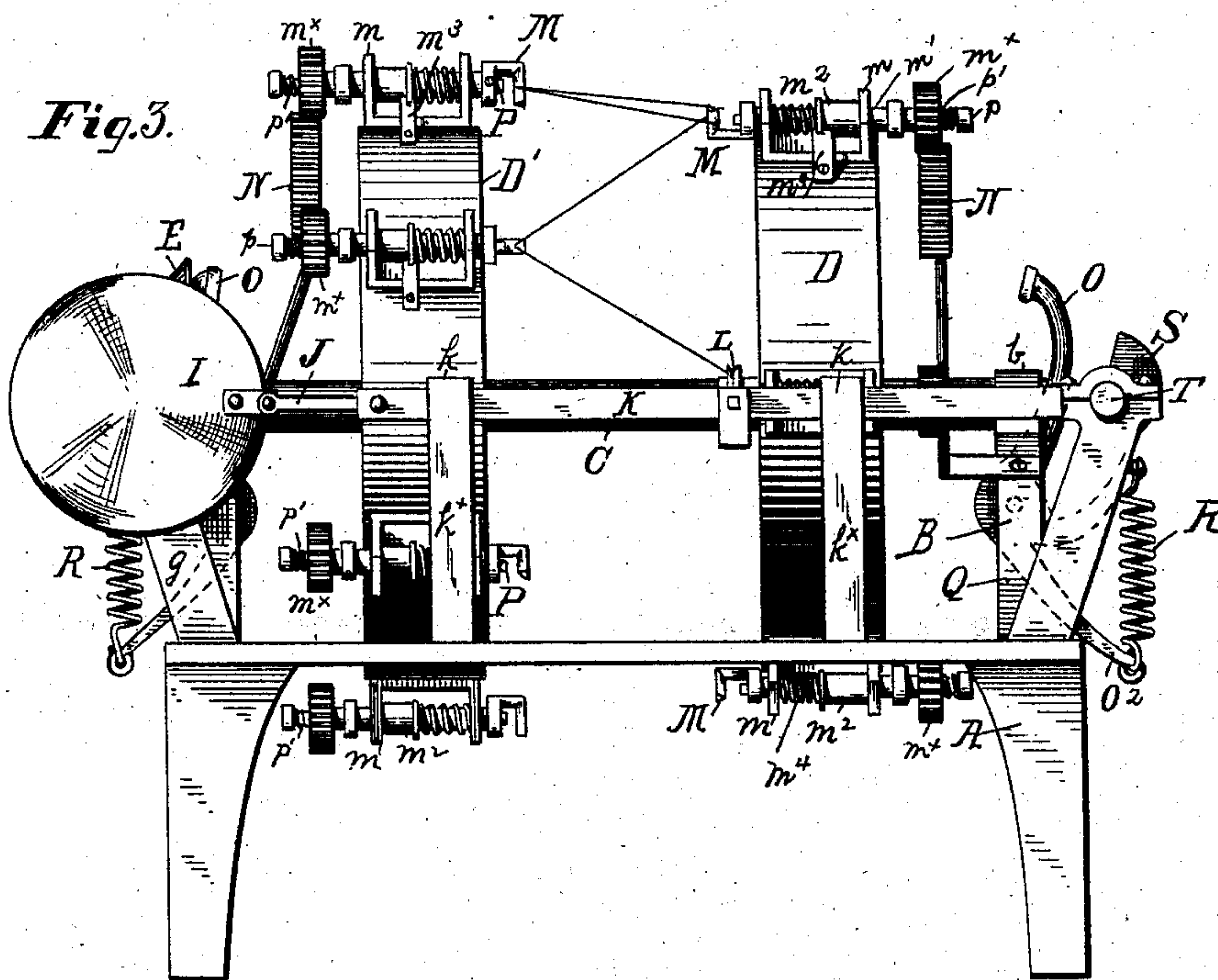
INVENTOR

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2 Sheets—Sheet 2.

APPARATUS FOR MAKING BARBED FENCE WIRE.

Patented Dec. 11, 1883.



John D. Collier

INVENTOR

By his Attorneys
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UNITED STATES PATENT OFFICE.

WILLIAM WILSON, JR., OF GREENVILLE, DELAWARE, ASSIGNOR OF ONE-HALF TO CHARLES GREEN, OF SAME PLACE.

APPARATUS FOR MAKING BARBED FENCE-WIRE.

SPECIFICATION forming part of Letters Patent No. 289,950, dated December 11, 1883.

Application filed July 16, 1883. (No model.)

To all whom it may concern:

Re it known that I, WILLIAM WILSON, Jr., of Greenville, in the county of New Castle and State of Delaware, have invented an Improved
5 Apparatus for Making Barbed Fence-Wire, of which the following is a specification.

The fence-wire which my apparatus is designed to manufacture is composed of a single strand which is, at predetermined intervals
10 along its length, twisted upon itself so as to form laterally projecting necks or shanks which terminate in two projecting extremities, spurs, or barbs.

My apparatus is designed, first, to twist a
15 loop upon a continuous wire, and then cut open or divide the loop, so as to make it into two spurs or barbs.

Incidentally to the accomplishment of the above result, my invention relates to a class of
20 mechanism which is used to twist a loop upon wire, and employs many of the instrumentalities found in a certain improved apparatus for looping and cutting wire invented by me, application for patent for which was executed
25 by me July 2, A. D. 1883, and filed in the United States Patent Office July 16, A. D. 1883, Serial No. 100,917, the said apparatus being an improvement upon a machine for looping and cutting wire invented by me and
30 patented to me in and by Reissued Letters Patent No. 9,404, dated October 12, 1880.

In order to a thorough comprehension of my present apparatus, brief reference to my former patented invention and a redescription
35 herein of such parts of my improved apparatus for looping and cutting wire as are employed in my present apparatus are essential.

My former patented invention consists, essentially, of a frame upon which revolves a
40 circular horizontal table, which carries upon its upper surface a series of twisting-hooks operated by pinions secured thereto, which at stated intervals engage with racks supported from the frame, so as to revolve the hooks and twist the wire fed to them, and also carries
45 a corresponding series of cutting devices employed to cut the looped wire to a given length, the cutting devices being operated by a cam, which is situated beneath the revolving table
50 in the frame-work of the machine.

In my improved apparatus I employ two circular tables or heads, which are mounted in propinquity upon a horizontal shaft, which occasions their common revolution in vertical planes. The twisting-hooks are secured upon
55 the periphery of the tables, and are operated through pinions engaging with exterior fixed racks, as in my former patented apparatus. The cutting devices, however, which are provided for cutting off the wire in short sections
60 having each a loop on one extremity, are dispensed with in my present apparatus, and in their stead are substituted a cutting arrangement for splitting or cutting open the loops, so as to form the barbs. 6

The wire-feeding devices, or those which direct the wire to the looping devices, are precisely the same as those of my improved looping apparatus, and my present apparatus may, in general terms, be said to consist of my improved looping apparatus without the cutting-off chisels and with the addition of a loop cutting or splitting mechanism.

A preferred form of a convenient embodiment of my invention is represented in the drawings, and hereinafter described and claimed. 75

In the accompanying drawings, Figure 1 is a top plan view of an apparatus conveniently embodying my invention. Fig. 2 is a side elevational view of the same, sight being taken
80 in the direction of the arrow below Fig. 1. Fig. 3 is an end elevational view of the same, sight being taken from the right-hand side of Figs. 1 and 2. Fig. 4 is a sectional elevational detail of the loop-cutting mechanism; and Fig. 85 5 is a detailed view of the barbed wire produced by the operation of my apparatus.

Similar letters of reference indicate corresponding parts.

A is the frame-work of the machine, the same being composed of a bed-plate suitably supported upon legs or other supports. 90

B are supplemental frames, supported upon the frame-work and carrying the bearings of the horizontal head-shaft C, upon which the heads D D' are mounted face to face. These heads are preferably constructed as flanged disks, the disk being a face-plate designed to carry the circumferential flange constituting the periphery of the head, and upon which 100

the twisting-hooks are mounted; but they may be of any other construction, as they are mere rotary devices, upon the peripheries of which the twisting-hooks are carried.

5 One extremity of the head-shaft is provided with a bevel spur-wheel, E, which engages with a beveled pinion, F, which is mounted upon the driving-shaft G, the journals of the latter being supported from the frame-work
10 by the brackets *g* or otherwise, as convenience of manufacture may dictate.

Motion is imparted to the driving-shaft from the pulleys H. The driving-shaft is also equipped at its extremity opposite to the pulleys with a crank-wheel, I, the wrist-pin of
15 which is attached to one extremity of a pitman, J, the opposite extremity of which is connected with a slide bar, K, adapted for longitudinal reciprocation through the journals *k*, which are formed in or applied to
20 minor standards *k'*, erected from the frame-work.

The slide-bar is equipped with a peripherally-grooved guide feed-roll, L, whose axle is
25 parallel with the slide-bar, which is the device employed to carry and feed the wire, which is fed in from the reel around said roll alternately to the twisting-hooks of the two heads, the timing of the throw of the slide-bar being
30 such that the feed-roll is advanced to meet a particular hook on either of the heads just at the instant that that hook in the rotation of the head presents itself in position to engage the wire, the retreat of the feed-roll being
35 also such that it presents the wire to the next succeeding hook upon the opposite head in time to supply said hook with the wire.

The twisting-hooks being, as represented and hereinafter explained, set alternately, as
40 considered with respect to the two heads, the feed of the wire, as will be readily understood, and as is well shown in Fig. 1, is first to one hook on one head, then to the next succeeding hook on the opposite head, then to the next
45 succeeding hook on the head first considered, and so on continuously, so long as the supply of wire fed to the machine and the rotation of the heads continue.

M are the twisting-hooks, being of the construction represented in the drawings, and essentially of that described in my former patent—that is to say, a housing, *m*, secured radially to the peripheral face of the head, serves as a bearing for the hollow spindle *m'* of the
50 hook, said spindle being parallel with the head-shaft, and being provided upon its outer extremity, or that which is opposite to the hook, with a pinion, *m''*. The spindles and their pinions are so set that in the revolution
60 of the head with which they are connected they successively encounter and are rotated by the teeth of a stationary rack, N, erected from the frame-work, and in any convenient manner secured thereto. In the apparatus
65 represented in the drawings these racks are shown as adjustably secured to the supple-

mental frames. The collar *m''* upon the spindle has an offset in it, which, by encounter with the stationary spring-detent *m'''*, prevents the spindle and hook from revolving backward. 70
A stationary rack is employed in connection with each head, and each head is provided with a corresponding number of alternately oppositely-disposed twisting-hooks, the apparatus represented in the drawings depicting 75
six twisting-hooks to each head. Each spindle is surrounded by a spring, *m''''*, which abuts between the collar *m''* and one arm of the housing *m*, and which serves to permit of the drawing forward of the hook as the wire shortens 80
up when the hook twists it.

So much of my present apparatus as has just been described is found in my improved looping-machine for which, as stated, I have made application for patent, the only difference being 85
that the spindles of the hooks of said looping-machine are not made hollow, as in my present apparatus.

The object of making the hook-spindles of my present apparatus hollow is to adapt them 90
to contain spring-chisels P, which are adapted to longitudinally slide within the spindle, and which are provided with a head, *p*, between which and the pinion *m''*, which the spindle carries, is coiled a spring, *p'*, which 95
acts to draw the chisel back after it has been struck forward.

The inner face of the hook is formed into a cutting-edge, as will be observed by reference to the drawings, and especially to Fig. 1, and 100
against this edge the edge of the chisel strikes and occasions the severance of the wire which is between the hook and the chisel.

The instrumentality which I employ to occasion the advance of the respective chisels 105
is a spring-controlled hammer, O, which is pivoted to a standard, Q, erected from the bed-plate of the apparatus. The hammer below its fulcrum is provided with two arms, O' O'', one of which, O'', is hooked at its extremity 110
and connected with a spiral spring, R, the upper extremity of which is linked to the one of the brackets *g* which supports the driving-shaft G.

Upon the driving-shaft is mounted a cam, 115
S, which is set to encounter the arm O' of the hammer, and which occasions the depression of said arm and the consequent tilt of the hammer backward and in position for striking, the blow of the hammer taking place at 120
the instant when the further rotation of the cam causes its escape beyond the arm O' of the hammer.

While I have spoken of but a single hammer, one hammer is employed in connection 125
with each head, and the hammers are so timed as to strike each chisel as the latter advances in the rotation of its head into the path of the hammer.

In order to operate the hammer which is 130
employed with the head D, I have provided a hammer-shaft, T, similar to the driving-shaft

upon the opposite side of the apparatus, which shaft is provided with a cam, S', and is driven through the medium of a cross-shaft, U, and two miter-gears, V V', as will be understood from a reference to Fig. 1.

The gearing of the driving-shaft G and hammer-shaft T is such as to impart to them an equal speed of rotation, and the cams which they respectively carry are so set upon them as to impart an alternate and not synchronous actuation to the chisels, the chisels, which operate in connection with the twisting-hooks of a given head, acting to sever the loops successively at the instant that a given chisel of one of the heads comes in the path of the hammer, at which instant that hammer, as stated, strikes said chisel.

From the arrangement of the twisting-hooks and chisels it will be readily understood that the hammers operate alternately.

Having now described the construction of an apparatus conveniently embodying my invention, it is proper for me to say that the adjustment of the several operative parts is readily determinable by the mechanic setting up the machine, and that it is, of course, essential to the harmonious operation of all the assembled parts that each operative part should perform its function at the proper instant. Thus it is essential that the guide feed-roll should present the wire at the proper moment, and that the proper twisting-hook should be properly presented to engage the wire; that said hooks should be rotated at the proper instant to twist the loop upon it; that the hammers should operate alternately to cause the cutting of the wire at the proper instant, and that the various members should occasion the operation of the feed-roll. The twisting-hooks and the hammers should be so relatively disposed as to effectuate the above results.

While I have described only certain specific mechanisms and a certain fixed and determinate arrangement of the same, I desire it to be understood that I contemplate the use and application of various equivalent and allied devices and constructions in the embodiment of my invention in practical forms.

While I have represented and described the

hooks as formed with chisel-edges, it is yet obvious that they could be made without such edges, and act simply as anvils, against which the chisels alone would cut. I prefer, however, to make them chisel-edged, as it imparts a better point to the resulting barb of the wire.

The barbed wire as it emerges from the apparatus is zigzag and not straight, and requires to be pulled straight when it is reeled.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. In a machine for making barbed fence-wire, the following instrumentalities in combination: first, two rotating heads provided with devices which are suitably operated to automatically form loops upon wire; second, an automatically-operating feeding device for supplying wire to the looping devices of both heads; third, devices suitably operated to automatically cut or split open the loops, and, fourth, mechanism for causing the operation of the feeding and loop-splitting devices.

2. In a machine for making barbed fence-wire, the combination of two heads rotating in parallel planes, twisting-hooks having chisel-edges carried by said heads and disposed in alternate opposite series, means for occasioning the rotation of the heads, means for imparting predetermined rotations to the hooks, a guide feed-roll adapted to supply the hooks in alternate opposite series with the wire to be looped, means for operating the guide feed-roll, spring-chisels for cutting or splitting the loops of the wire, and means for operating said chisels, substantially as hereinbefore set forth.

3. The chisel-edged hooks mounted upon a hollow spindle, a chisel free to slide within said hollow spindle, and adapted to act against the chisel-edge of the hook, means for imparting rotation to the spindle and hook, and means for actuating the chisel.

In testimony whereof I have hereunto signed my name this 2d day of July, A. D. 1883.

WM. WILSON, JR.

In presence of—

J. BONSALE TAYLOR,
JOHN JOLLEY, Jr.