

(No Model.)

3 Sheets—Sheet 1.

W. WILSON, Jr.

APPARATUS FOR LOOPING AND CUTTING WIRE.

No. 290,955.

Patented Dec. 25, 1883.

Fig. 2.

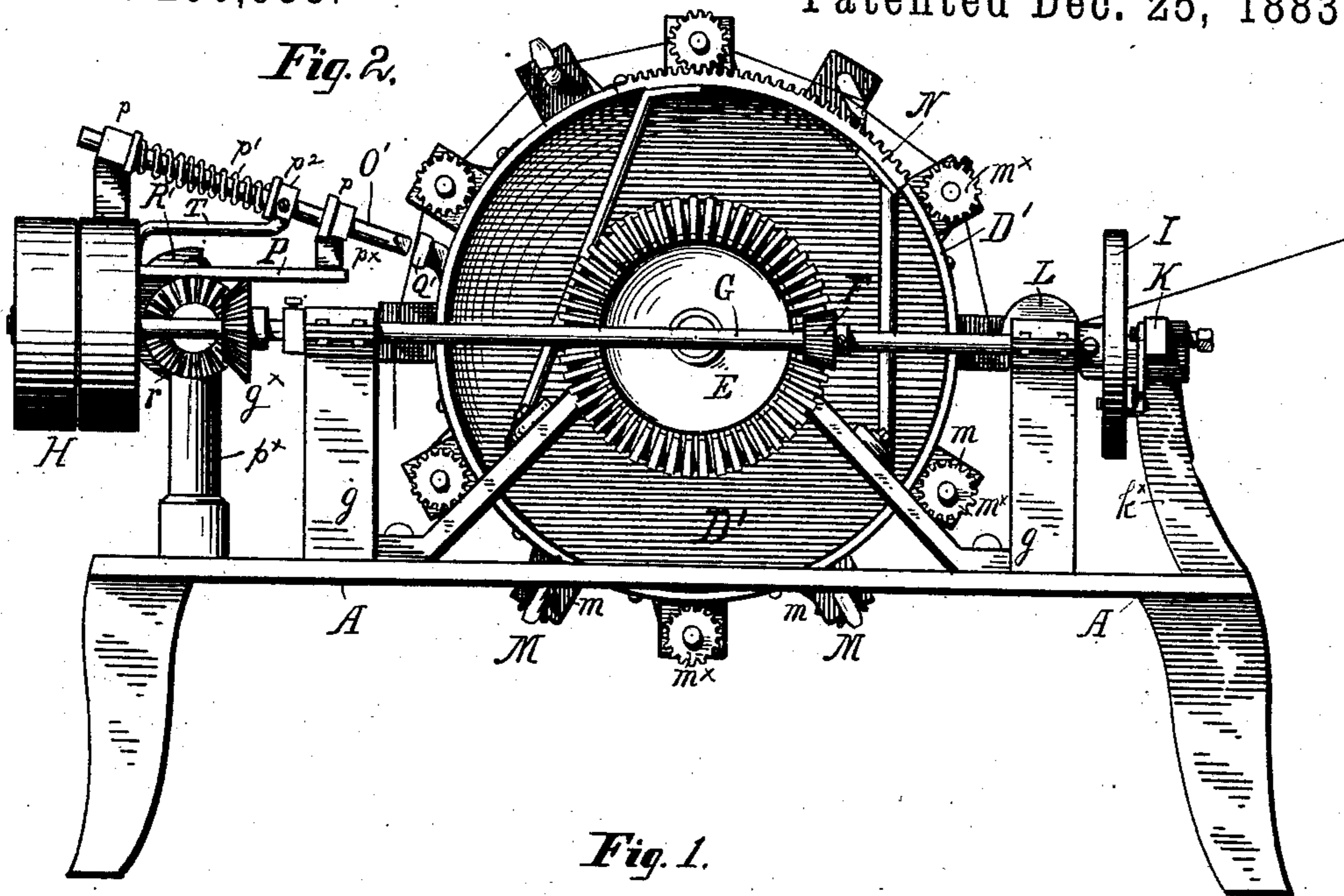
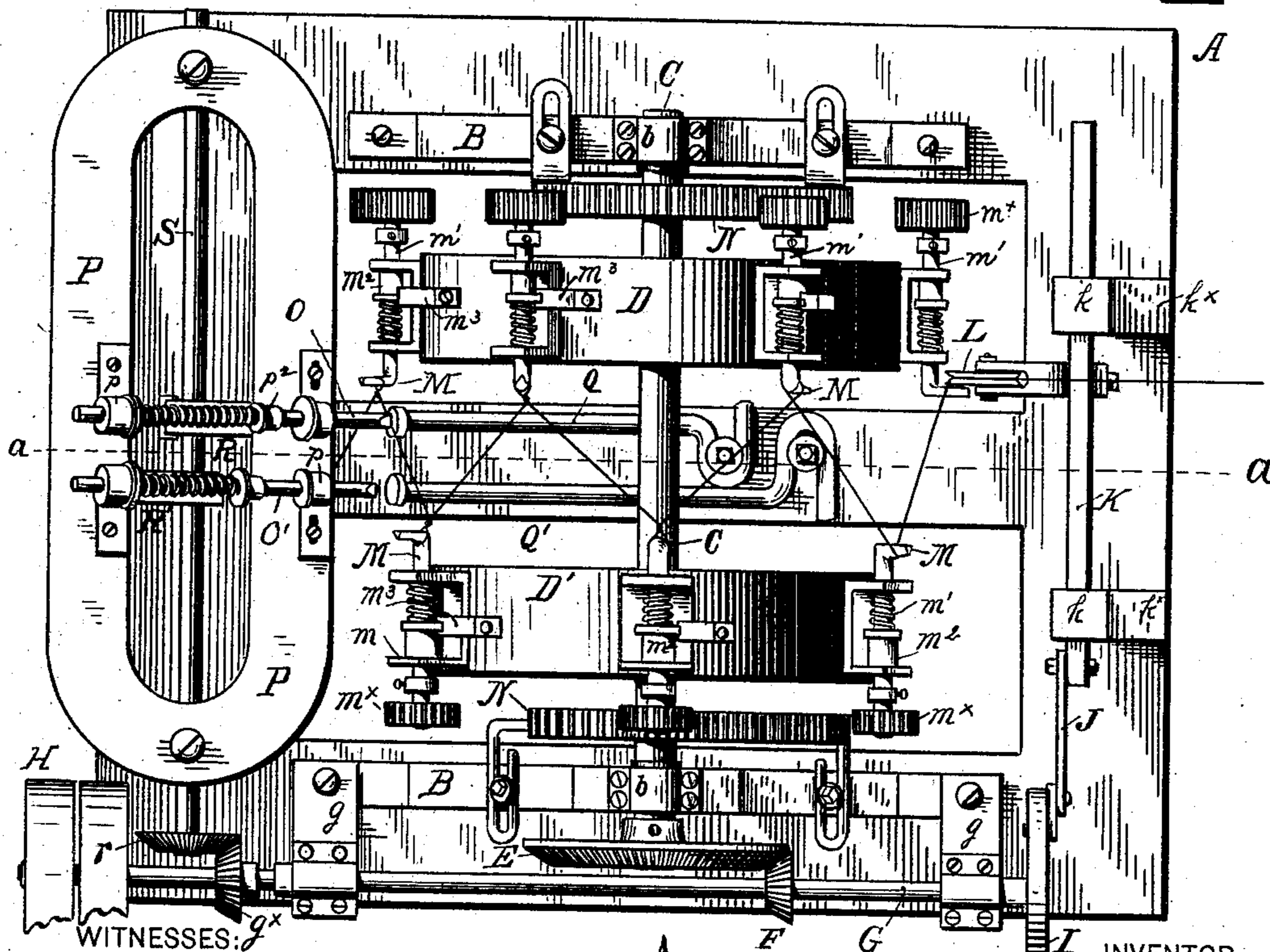


Fig. 1.



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(No Model.)

3 Sheets—Sheet 2.

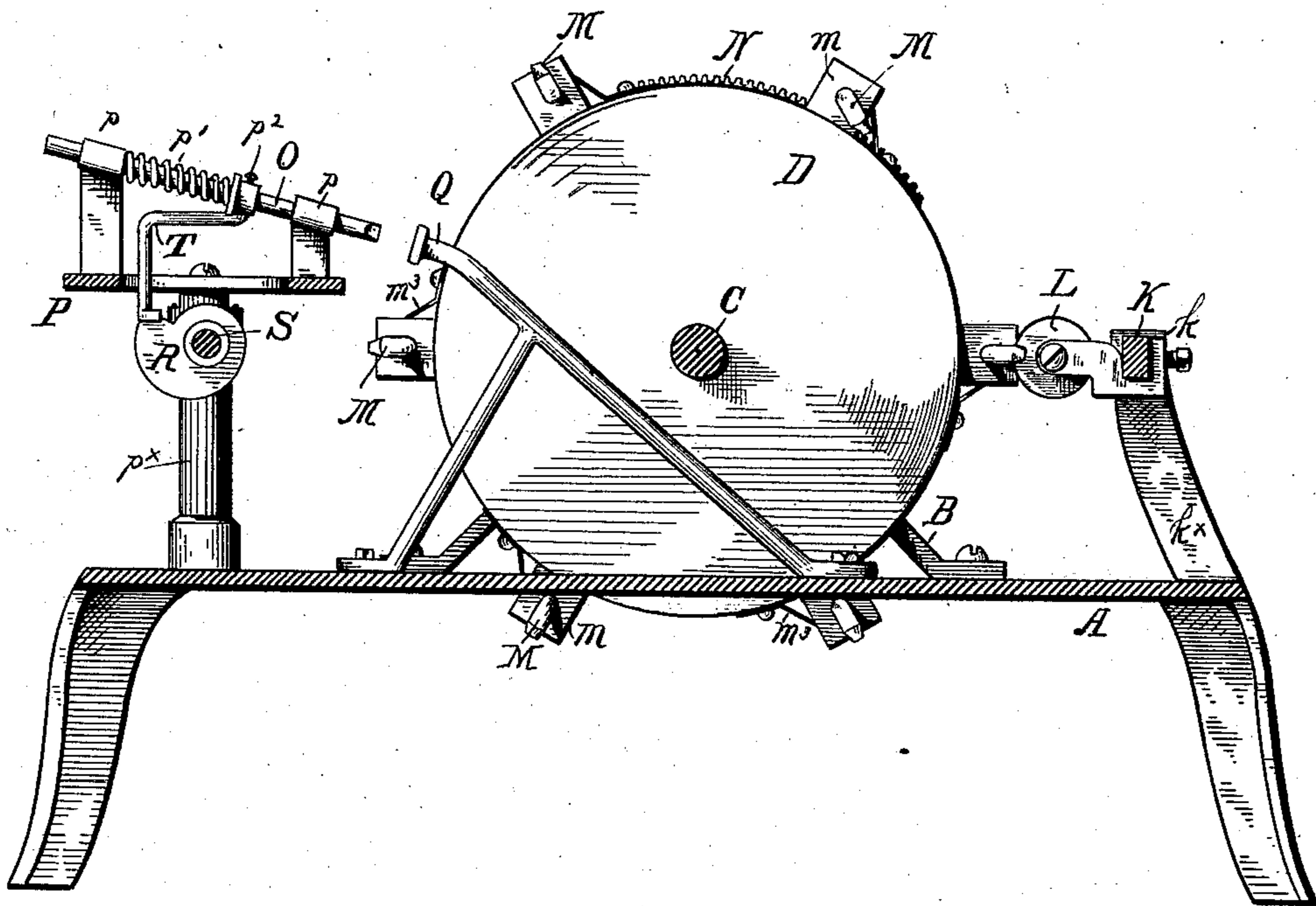
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Fig. 3.



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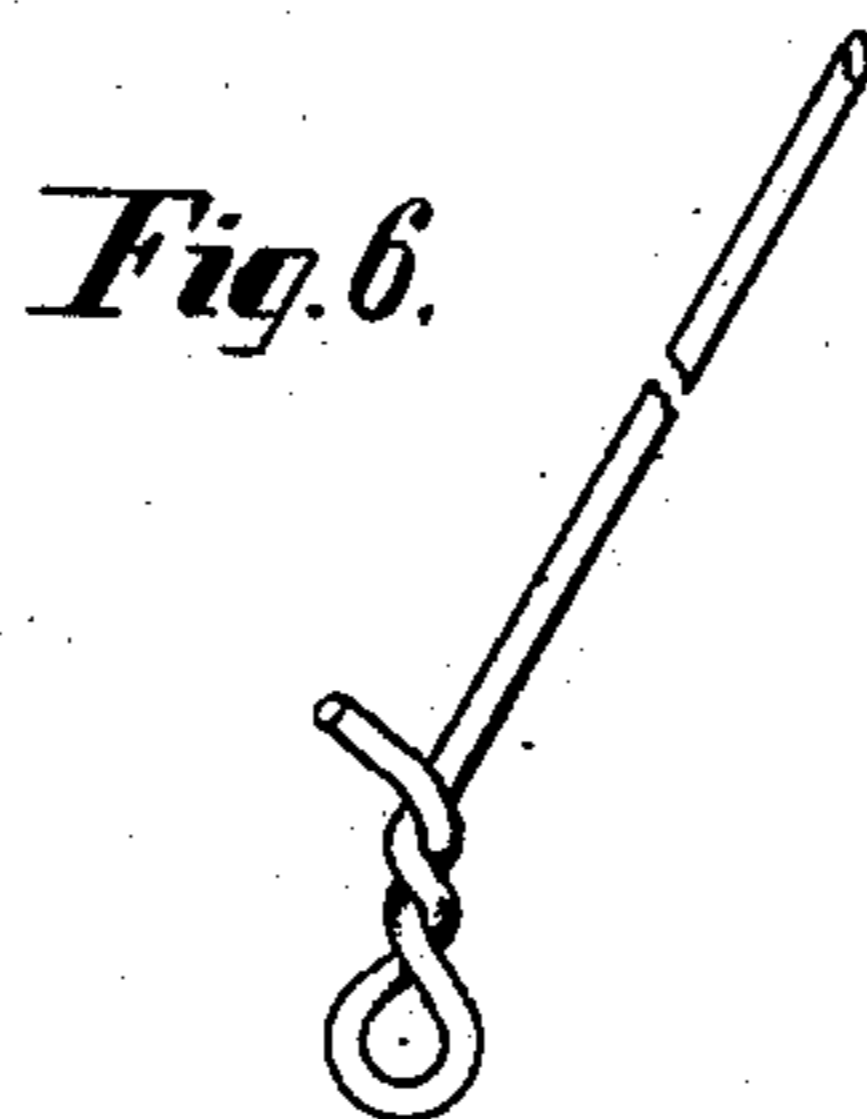
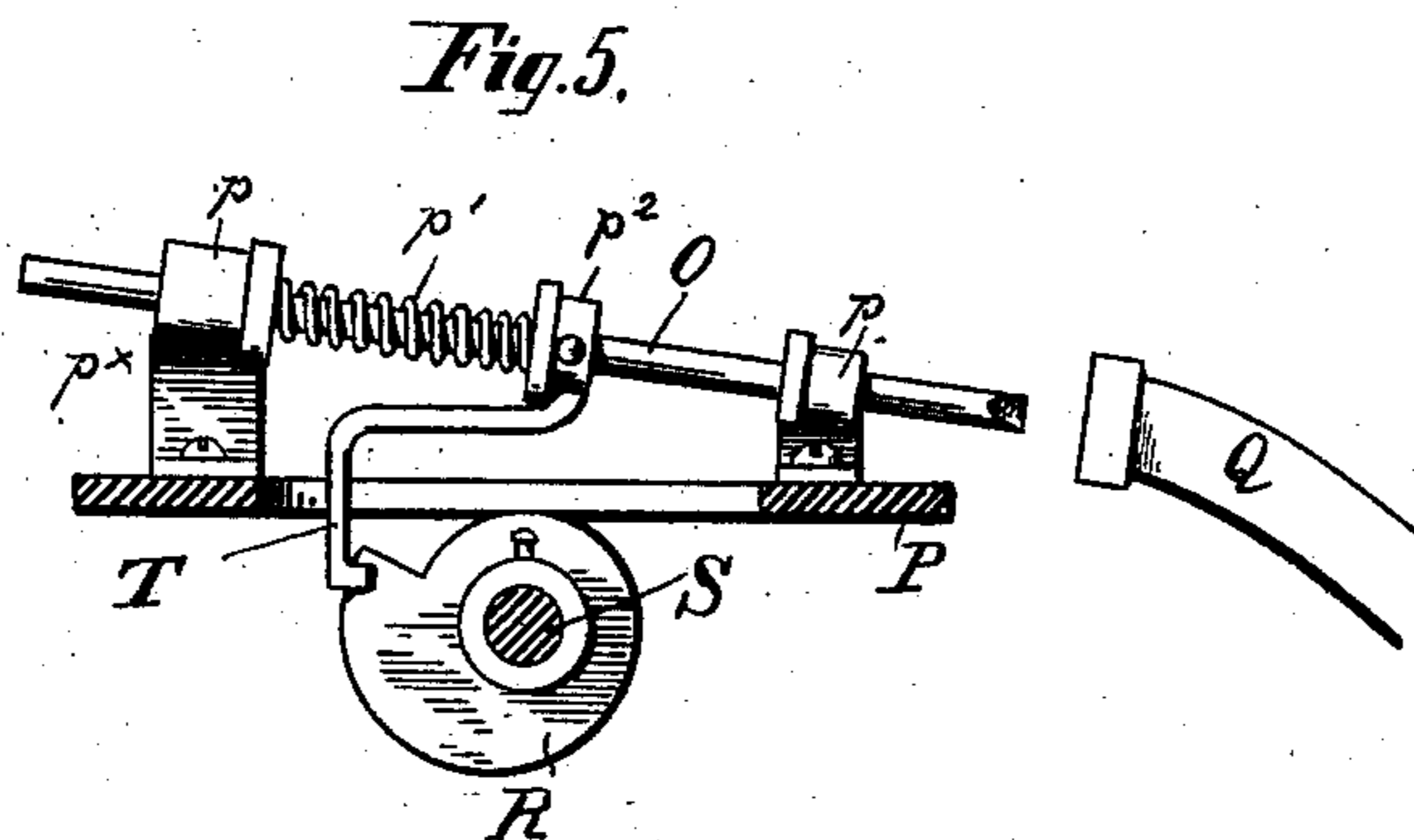
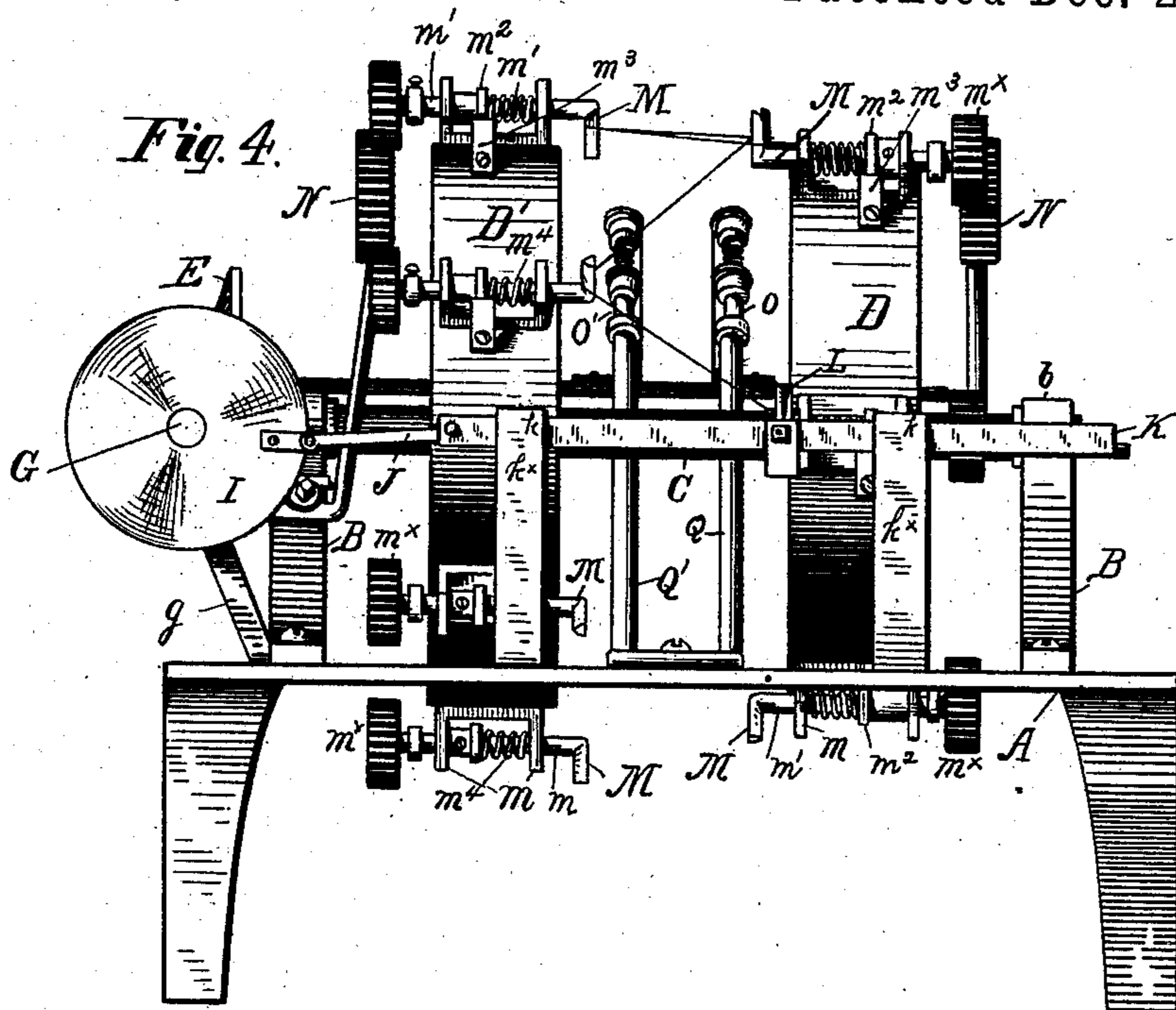
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APPARATUS FOR LOOPING AND CUTTING WIRE.

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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 LOOPING AND CUTTING WIRE.

SPECIFICATION forming part of Letters Patent No. 290,955, dated December 25, 1883.

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

To all whom it may concern:

Be 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 Looping and Cutting Wire, of which the following is a specification.

My invention relates to a class of mechanism which is used to twist a loop upon wire and to cut the looped wire to a given length,
10 the object being the rapid manufacture of looped sections of wire; and it is an improvement upon a machine for looping and cutting wire invented by me and patented to me in and by Reissued Letters Patent No. 9,404,
15 dated October 12, 1880, the same having been originally patented April 29, 1879.

Looped wire is used for various purposes in the arts—for instance, as an opening device for metallic cans, as a means of securing tags,
20 and for the baling of cotton, grain, and kindred substances.

My former patented invention consists, essentially, of a frame upon which revolves a circular horizontal table, which carries upon its
25 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 a
30 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 in the frame-work of the machine.

In my present 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
40 are secured upon the periphery of the tables, and are operated through pinions engaging with exterior fixed racks, as in my former apparatus. The cutting devices are, however, not carried by the tables or heads, (as in my
45 present apparatus I term them,) but are supported exterior to the heads and operated by independent mechanism. The wire-feeding devices, or those which direct the wire to the
50 looping devices, are essentially different from those of my former invention, and such as the

organization of my present apparatus renders essential.

A preferred form of a convenient embodiment of my invention is represented in the drawings, and hereinafter described and claimed. 55

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 in the direction of the arrow below Fig. 1. 60 Fig. 3 is a longitudinal central vertical sectional elevation on the line *a a* of Fig. 1, sight being taken in the direction of the arrow below said Fig. 1. Fig. 4 is an end elevational view of the same, sight being taken from the
65 right-hand side of Figs. 1, 2, and 3. Fig. 5 is a sectional elevational detail of one of the cutting-knives. Fig. 6 is a view in perspective of a given section of wire as produced by my machine. 70

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. 75

B are supplemental frames supported upon the frame-work, and carrying the bearings *b* of the horizontal head-shaft C, upon which the heads D D' are mounted face to face. These heads are preferably constructed as flanged
80 disks, the disks being a face-plate designed to carry the circumferential flange constituting the periphery of the head, and upon which the twisting-hooks are mounted; but they may be of any other construction, as they are mere
85 rotary devices, upon the peripheries of which the twisting-hooks are carried. 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-
90 shaft G, the journals of the same being supported from the frame-work 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-
95 shaft is also equipped at its extremity opposite to the pulleys with a crank-wheel, I, the wrist-pin of which is attached to one extremity of a pitman, J, the opposite extremity of which is connected with a slide-bar, K, adapted for 100

longitudinal reciprocation through the journals k , which are formed in or applied to minor standards k^* , erected from the frame-work. The slide-bar is equipped with a peripherally-grooved guide feed-roll, L , whose axle is 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 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 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 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 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 spindle m' of the 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 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 represented in the drawings these racks are shown as adjustably secured to the supplemental frames. The collar m^2 upon the hook-spindle has an offset in it, which, by encounter with the stationary spring-detent m^3 , prevents the spindle and hook from revolving backward, and is also so adjusted with respect to its position upon the spindle as to prevent the spindle and hook from revolving backward, and at the same time to hold the hook in such position as to enable it to readily take the wire from the guide feed-roll, and also to readily throw it off or drop it when looped and cut. 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 six twisting-hooks to each head. Each spindle is surrounded by a spring, m^4 , which abuts between the collar m^2 and one arm of the housing m , and which

serves to permit of the drawing forward of the hook as the wire shortens up when the hook twists it.

The wire-cutting devices are two spring-chisels, O and O' , supported in slide-bearings p , erected from a supplemental bed-plate, P , supported upon pedestals p^* from the frame-work. The position of the slide-bearings is such that the two chisels, one of which is employed in connection with the hooks of each head, are radial to the head-shaft. The chisels are controlled to strike by means of a spiral spring, p' , coiled about them between the bearings, and abutting between the rear bearing and a fixed collar, p'' , upon the chisel. Upon the recoil of the spring acting against the collar, the chisel is driven forward to encounter an anvil, Q , erected fixedly from the frame-work, in a manner clearly represented in Fig. 3. The retraction of each chisel is occasioned by a cam, R , mounted upon a cam-shaft, S , journaled in the pedestals of the supplemental bed-plate, or otherwise, as is found convenient, which cam encounters a forked yoke, T , connected with the fixed collar on the chisel, and occasions the retraction of the collar and compression of the spring, and which shaft is actuated by a bevel-pinion, v , mounted on the cam-shaft, and engaging with a corresponding bevel-pinion, v^* , on the driving-shaft. The gearing of the cam-shaft is such as to impart to it a predetermined rotation, and the timing of the cams is such as to impart an alternate and not synchronous actuation to the two chisels. The wire as presented with the loops formed upon it is cut first by one chisel and then by the other, the chisel which operates in connection with the twisting-hooks of a given head operating to sever the looped wire successively at the instant that it is presented across the face of its anvil by each hook in turn of the head under consideration, and the other chisel operating in precisely the same manner with respect to the wire presented across its anvil by the hooks of the head in connection with which it operates.

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 a 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 said hook should also be left in position to enable the free discharge of the looped wire after it has presented it to the action of the chisel which cuts it off; that the chisel should operate properly to cut the wire at the proper instant, and

that the various members which occasion the operation of the feed-roll, the twisting-hooks, and the chisel should be so relatively disposed as to effectuate the above results. The operation of the machine has been sufficiently described, and is essentially, so far as the twisting of the loop and the cutting off of the wire, the same as that of my former invention.

While I have described only certain specific mechanisms and a certain fixed and determinate arrangement of the same, I desire it 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.

Having thus described my invention, I claim—

In a machine for looping and cutting wire, the combination of two heads rotating in parallel planes, twisting-hooks 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 off the looped wire, anvils against which said chisels act, and means for operating the chisels, substantially as hereinbefore set forth.

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25
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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.