

(No Model.)

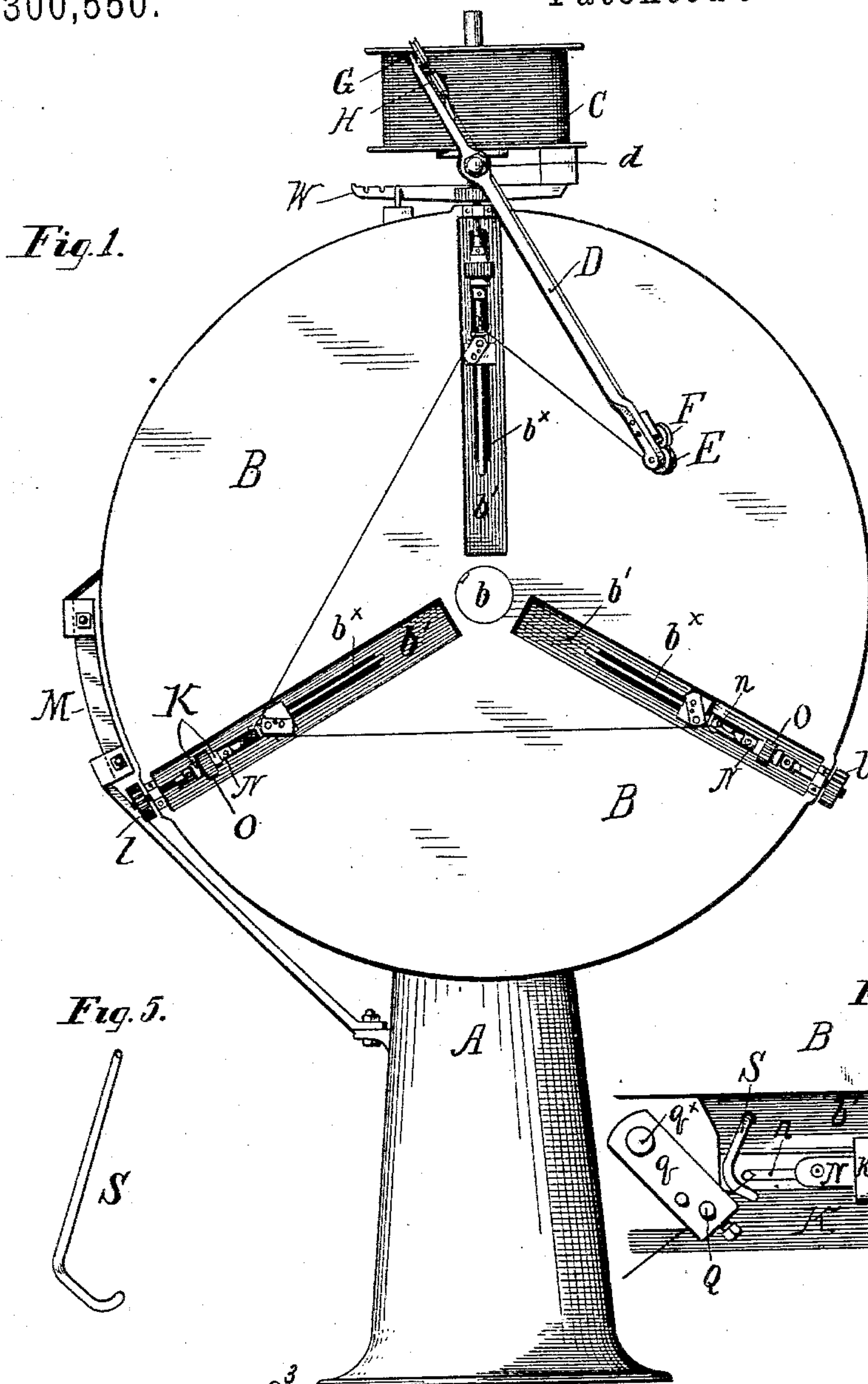
2 Sheets—Sheet 1.

W. WILSON, Jr.

MACHINE FOR MAKING LOOPED WIRE.

No. 300,550.

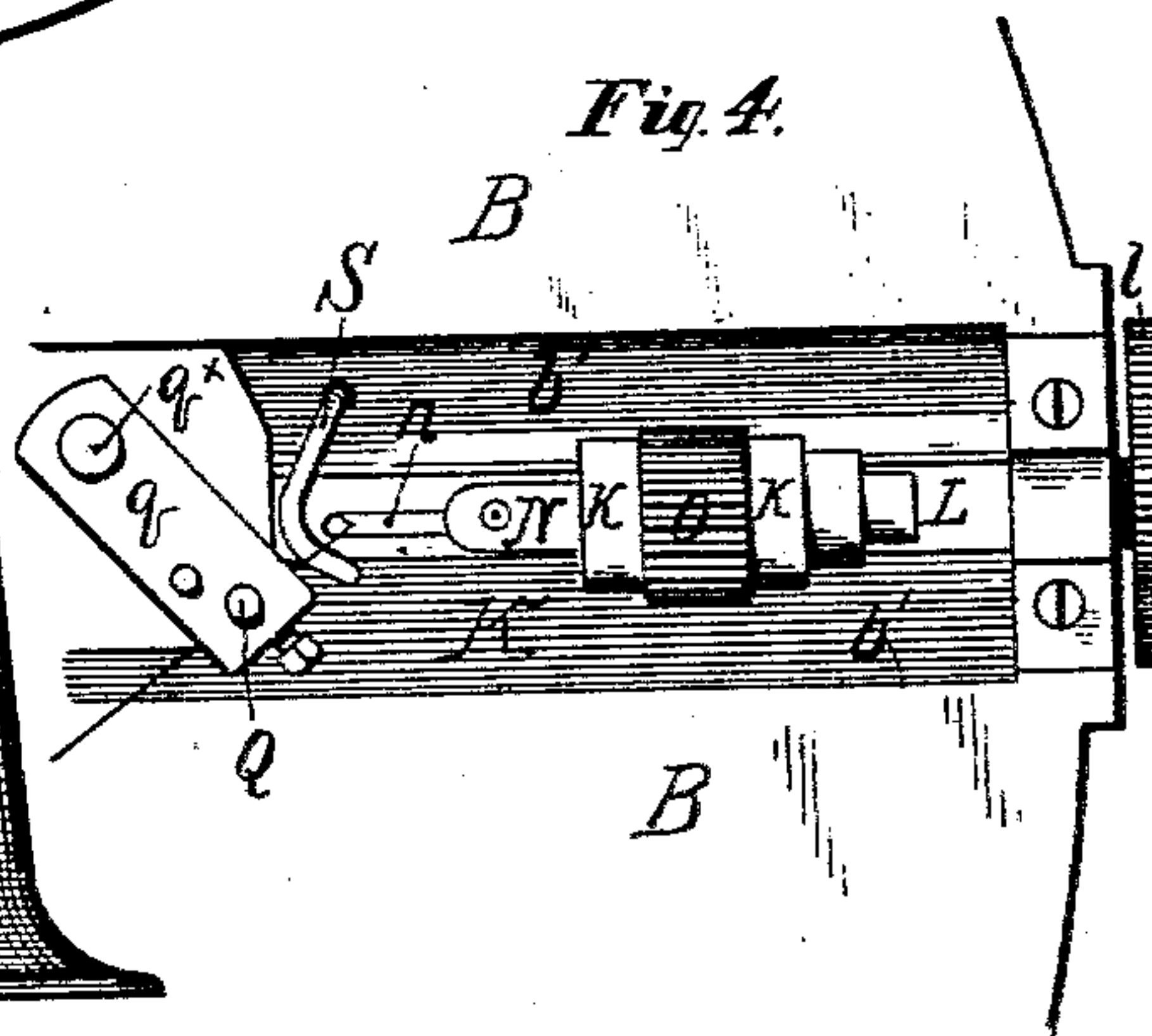
Patented June 17, 1884.



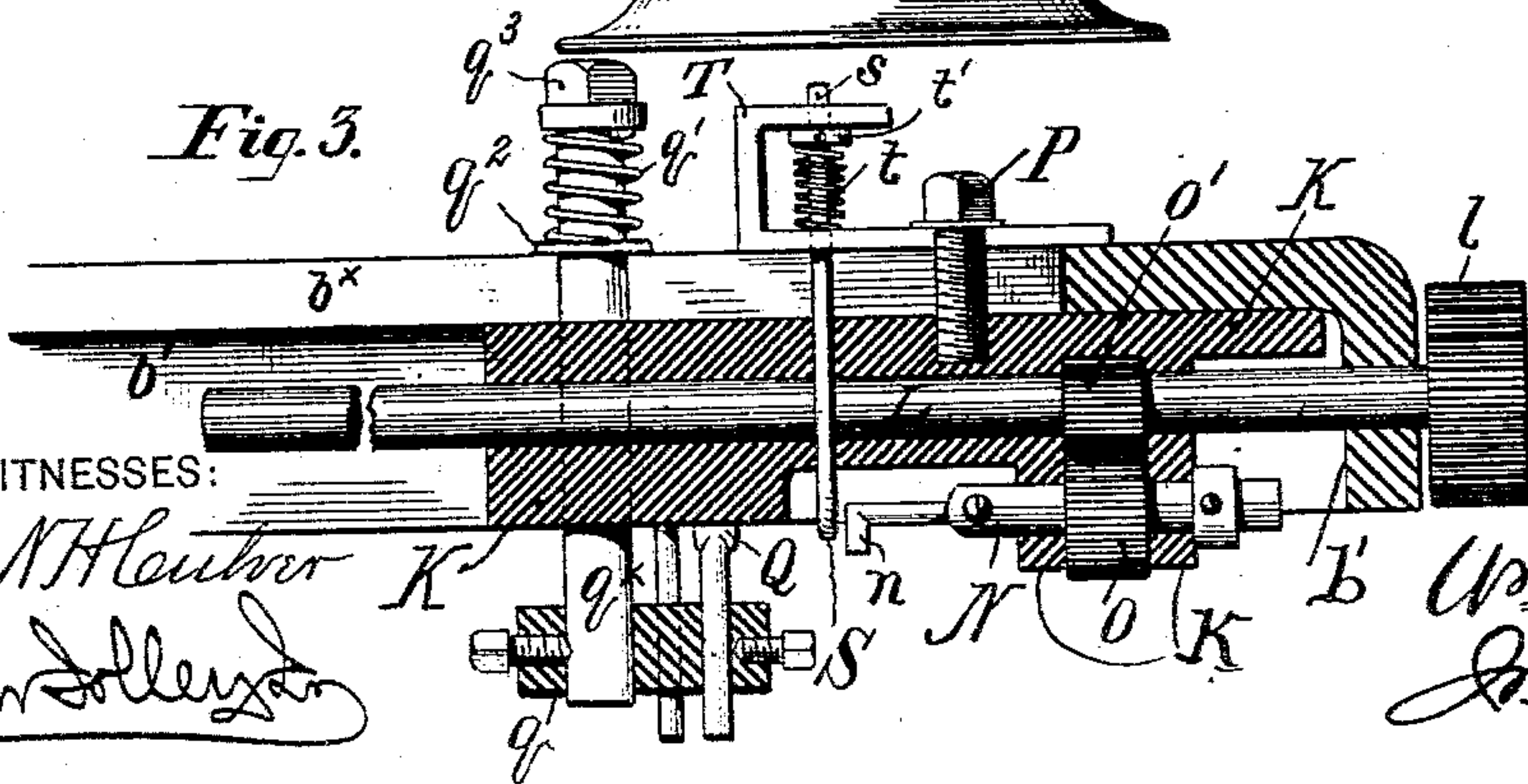
*Fig. 5.*



*Fig. 4.*



*Fig. 3.*



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2 Sheets—Sheet 2.

MACHINE FOR MAKING LOOPED WIRE.

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Attest  
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INVENTOR

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# UNITED STATES PATENT OFFICE.

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

## MACHINE FOR MAKING LOOPED WIRE.

SPECIFICATION forming part of Letters Patent No. 300,550, dated June 17, 1884.

Application filed February 8, 1884. (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 certain Improvements in Machines for Making Looped Wire, of which the following is a specification.

My invention relates to a class of machines which are used to twist a loop upon wire, and to cut the looped wire to a given length, and which have for their object the rapid manufacture of looped sections of wire.

My invention 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, dated October 12, 1880, the original of which Reissued Letters Patent were issued on the 29th day of April, 1879, No. 214,977.

Reference is to be made to my above-named Letters Patent for a more clear understanding of my present invention, which relates more particularly to the devices for feeding the wire and to the devices for looping and cutting it. The improvements forming the subject-matter of this application are shown in the accompanying drawings as applied to my patented machine for looping and cutting wire, represented as constructed with its circular table or head which carries the twisting-hooks, and which operates in a vertical and not in a horizontal plane. Looped wire is used for various purposes in the arts—for instance, as an opening device for metallic cans, as a means for securing tags, and for the baling of cotton, grain, and kindred substances. My former patented invention consists, essentially, of a frame, (in the particular organization of that machine represented by the standard A,) which supports for revolution a circular table or head, which carries 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 said hooks and twist the wire fed to them, and which also carries a corresponding series of cutting devices employed to cut the looped wire to given lengths. In that improved form of my patented apparatus which is represented in the drawings, the frame-work is, as stated, constituted by the standard A, while

the table (or "head," as it is more properly termed) B is set for revolution in a vertical plane. The wire feeding and twisting devices which constitute the particular points of invention in this application are hereinafter described and claimed.

In the accompanying drawings, which, as stated, represent my improvements applied to a wire looping and cutting machine, embodying in its arrangement a vertically-disposed revolving head, Figure 1 is a front elevation of the entire apparatus. Fig. 2 is a rear elevation of the same. Fig. 3 is a sectional view of the wire twisting, cutting, and loop-discharging devices, the section being taken in a plane at right angles to the face of the head. Fig. 4 is an enlarged face view of the looping, cutting, and discharging devices. Fig. 5 is a perspective detail of the loop-discharging arm; and Fig. 6 a side elevation of the top of the standard, showing the bracket which supports the feed-arm.

Similar letters of reference indicate corresponding parts.

In the drawings, A, as stated, represents the standard or supporting frame-work, and B the revolving head, which carries the wire looping, cutting, and discharging devices.

C is the reel, upon which the wire to be looped is coiled, which is conveniently connected with the upper extremity of the standard, and is controlled by a friction-brake device, W.

D is the feed-arm, which is connected by the pivot *d* to a bracket, *d'*, or kindred supporting device, sprung from the standard or other fixed point of support. The feed-arm is adapted to be so inclined and adjusted that one of its extremities overhangs the face of the revolving head, while its other extremity, or that which is above its pivot, faces the periphery of the reel. At its forward extremity the feed-arm is equipped with a directing-wheel, E, the periphery of which is grooved, and with a guard-wheel, the periphery of which is also grooved, and which is so set with respect to the directing-wheel as to constitute, by its groove, a guard to the groove in the directing-wheel, so that wire passing around the directing-wheel in its groove is held in place by the guard-wheel. The rear extremity of the feed-



arm is likewise provided with two grooved pulleys, G and H, between which the wire coming from the reel passes, and around one of which it is first conducted. Both the directing-wheel and its grooved wheel and the grooved pulley serve to conduct the wire as it is led from the wheel both along the course of the arm and to the twisting-hooks, the set of the feed-arm in the set-up of the machine being made such that the directing-wheel at its outer extremity treads against the face of the revolving head, as the latter revolves, at a point in the path of the twisting-hooks. The adjustment of the feed-arm is made possible by a nut,  $d'$ , Fig. 6, applied to the pivot  $d$ , upon which the feed-arm is hung. The revolving head is sustained upon a shaft,  $b$ , journaled in the standard, to which rotation is imparted through the medium of a bevel-gear, I, and pulley J, as seen in Fig. 2. The revolving head is provided with a series of radial slots,  $b'$ , within which are contained the devices which serve to twist, cut, and discharge the wires. These devices in the organization of this machine are the following, one set only being now described:

K is a slide-bearing of any preferred construction, adapted to slide end for end within the slots  $b'$  of the head—that is to say, radially with respect to the head. Within the slide-bearing is journaled the pinion-shaft L, Fig. 3, which passes through the rim of the head, and beyond said rim is equipped with a pinion,  $l$ , which, in the revolution of the head, engages with the rack M, so as to be revolved thereby.

N is a counter-shaft, also journaled in the slide-bearing and carrying a twisting hook,  $n$ . Rotation is imparted to the counter-shaft from the pinion-shaft through the instrumentality of the toothed pinions  $o$   $o'$ , the latter of which is feathered upon the pinion-shaft in such manner as to permit of the endwise movement of the slide-bearing and pinion  $o'$  within the slot in the head. The slide-bearing is fastened fixedly in any desired position in the slot by means of the bolt P, the head of which bears against the rear face of the head through the medium of the bracket-frame T.

Q is the chisel, secured by means of a cross-head,  $q$ , upon the projecting extremity of a spring-controlled stem,  $q^x$ , adapted to slide through the slide-bearing and project to the rear of the head B through a counter-slot,  $b^x$ , formed parallel with and at the bottom of the radial slot  $b'$  through the substance of the head. A spring,  $q'$ , coiled upon the stem between a washer,  $q^2$ , and a cam-head,  $q^3$ , serves to bring the chisel down upon a portion of the slide-bearing as an anvil after the chisel has been lifted by the action of a camway, U, Fig. 2, fixed with reference to the standard, against which, in the revolution of the head, the cam-head  $q^3$  of the spring-controlled stem  $q^x$  slides and is lifted.

S, Figs. 3, 4, and 5, is a loop-discharging arm, being a bent wire or kindred device, (shown

detached in Fig. 5,) which, in the normal position of parts, stands in front of the hook, as shown in Figs. 3 and 4, and which, at its rear extremity, projects to the rear of the revolving head, and is equipped with a toe,  $s$ , projecting beyond a bracket-frame, T, secured in place by the bolt P, which fastens the slide-bearing. A spiral spring,  $t$ , acts against a collar,  $t'$ , on the arm S, and serves to return the loop-discharging arm to its normal position after the encounter of its toes with the camway U, or any other suitable camway, which encounter serves to lift said arm abnormally above the face of the revolving head, so as to cause the discharge of the looped wire from off the hook.

Such being a description of a preferred construction of my improvements, and it being borne in mind that one set of twisting, cutting, and discharging devices of the character above described are employed in connection with each radial slot in the head, it will be readily understood that the operation of the machine is by the engagement in the revolution of the head of the wire fed by the feed-arm by the hooks successively, by the twisting of the hooks through the instrumentalities described, to form the loops, by the cutting of the wire through the throw of the chisels, and by the lifting of the discharging-arm to disengage the wire, the several operations in the set-up of the machine taking place in predetermined sequence.

Each slide-bearing being radially adjustable with respect to the revolving head, it is obvious that the twisting, cutting, and discharging devices can be set at any particular radius, the feed-arm being of course adjusted so that its directing-wheel shall tread in the path of the hooks at whatever radial distance the latter be disposed, with the result that looped wires of different lengths within the area of the revolving head can be produced.

It is proper to state that the form and mechanical arrangement of the parts may be varied, and that the same elements may be combined in essentially the same way and operated to the same purpose, without a literal adherence to the precise form and arrangement hereinbefore described.

It is also quite possible for a mechanic so to vary the form and arrangement both of the feed-arm and of the slide-bearing and twisting, cutting, and looping devices which it carries, so as to adapt the same for use with precisely the form of machine described in my Reissued Letters Patent hereinbefore referred to.

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

1. In a machine for looping and cutting wire, the following instrumentalities in combination: first, a rotating head provided with devices which are suitably operated to automatically form loops upon wire and to automatically cut off a given section of looped wire; and, second, a feed-arm supported independently of the head, arranged to overhang the head, and pro-



vided at its extremity, which so overhangs, with a directing-wheel, by means of which wire passed around the wheel is in the rotation of the head fed to the devices for forming the loops upon the wire.

2. In a machine for looping and cutting wire, the following instrumentalities in combination: first, a rotating head; second, devices for forming loops upon the wire; third, devices for cutting off a given section of looped wire; fourth, devices for discharging the looped wire from the looping devices; fifth, a device for feeding the wire to the looping devices; and, sixth, suitable means for operating said several instrumentalities, substantially as set forth.

3. In a machine for looping and cutting wire, in combination with a rotating head, devices which are suitably operated to automatically form loops upon wire, devices which are suitably operated to automatically cut off a given section of looped wire, the loop-discharging arm S, and means for operating said loop-discharging arm, substantially as set forth.

4. The combination of the rotating head provided with devices which are suitably operated to automatically form loops upon wire, and to automatically cut off a given section of looped wire, of a feed-arm which overhangs the head, and is provided with directing wheels or pul-

leys, which serve to guide and direct the feed of the wire.

5. In combination with the rotating head provided with radial slots, devices for forming loops upon wire, devices for automatically cutting off a given section of looped wire, means for discharging the cut wires, and means for securing the support and radial adjustment of said several devices with respect to said rotating head.

6. In combination, the twisting-hooks, means for actuating said hooks to predetermined rotations, the chisels, means for effecting the predetermined lift and drop of said chisels, the loop-discharging arm, means for securing the operation of said arm to effect the discharge of the looped wires, a slide-bearing or kindred device for containing said assembled devices, a rotating head with respect to which said slide-bearing is radially adjustable, and means for securing the radial adjustment of said bearing and its connected devices.

In testimony whereof I have hereunto signed my name this 30th day of January, A. D. 1884.

WM. WILSON, JR.

In presence of—

C. GREEN, Jr.,

CHAS. C. GARRETT.