

S. M. STEVENS.
Barb-Fence Machine.
No. 222,608. Patented Dec. 16, 1879.

Fig. 1.

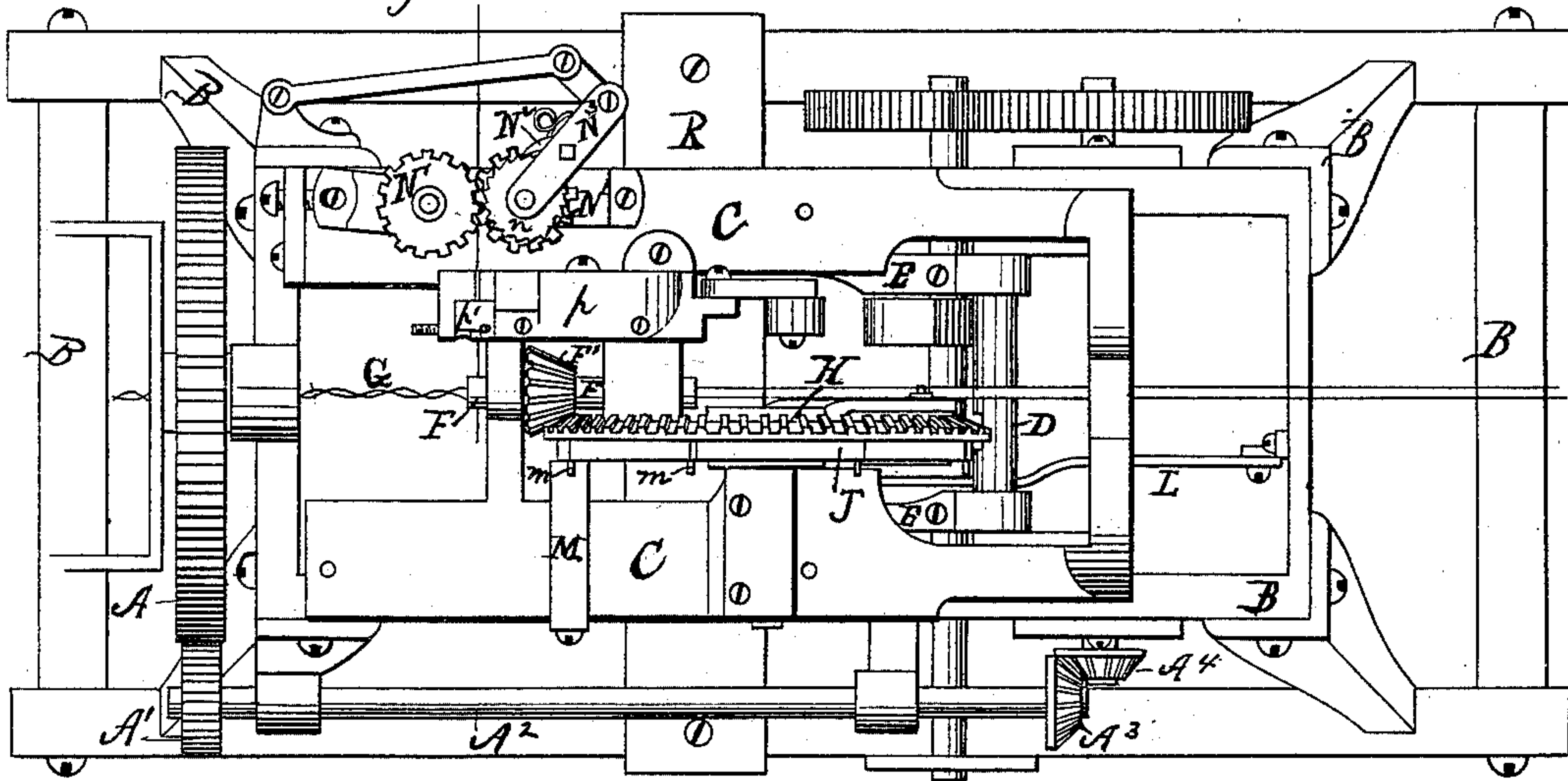


Fig. 6.

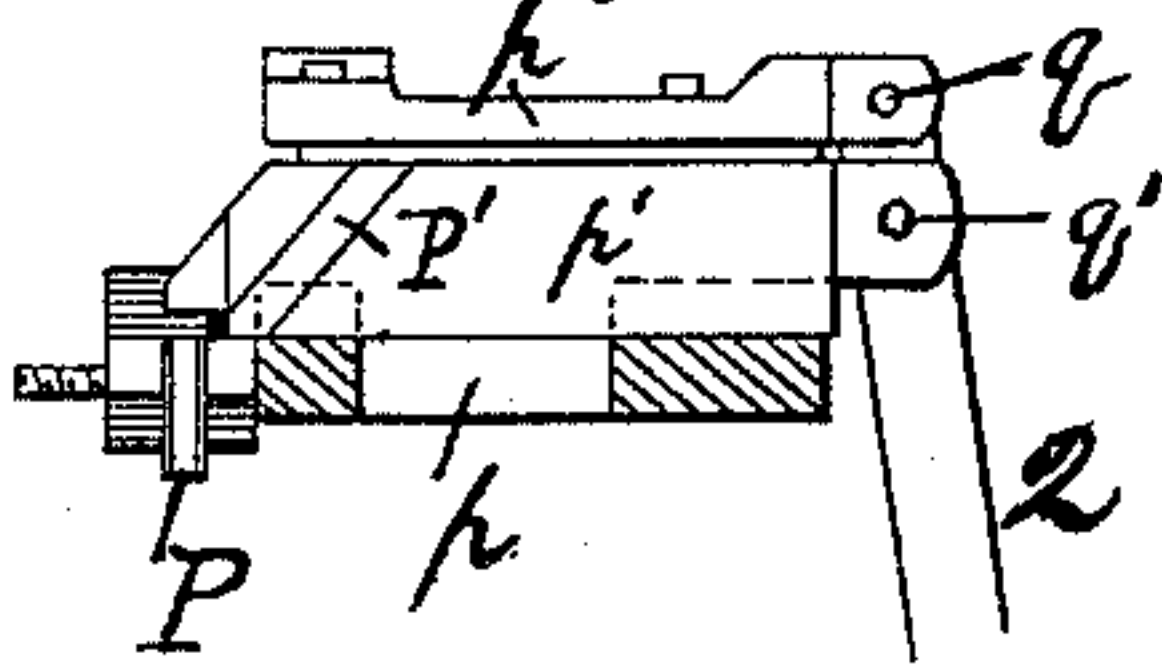
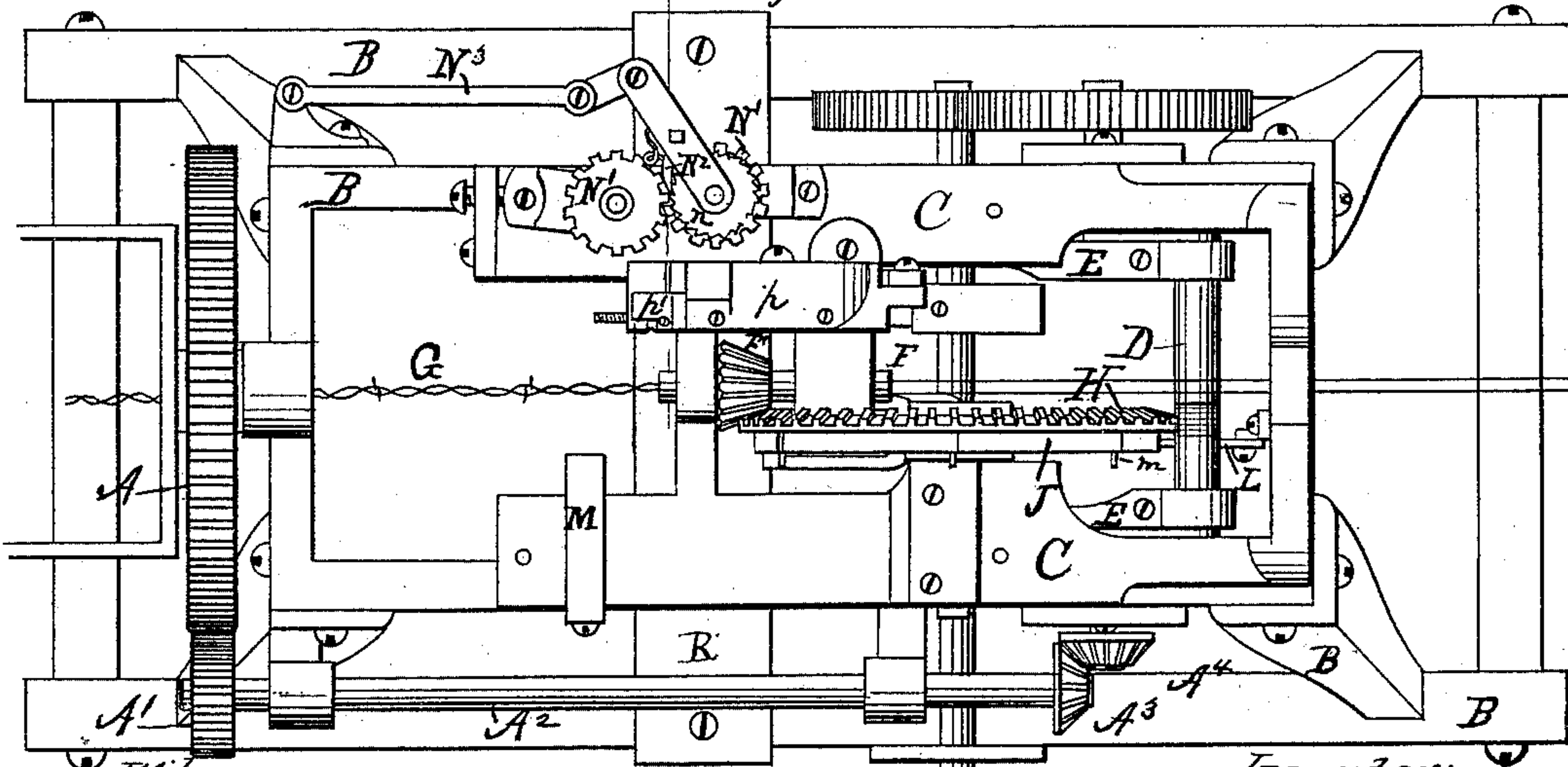


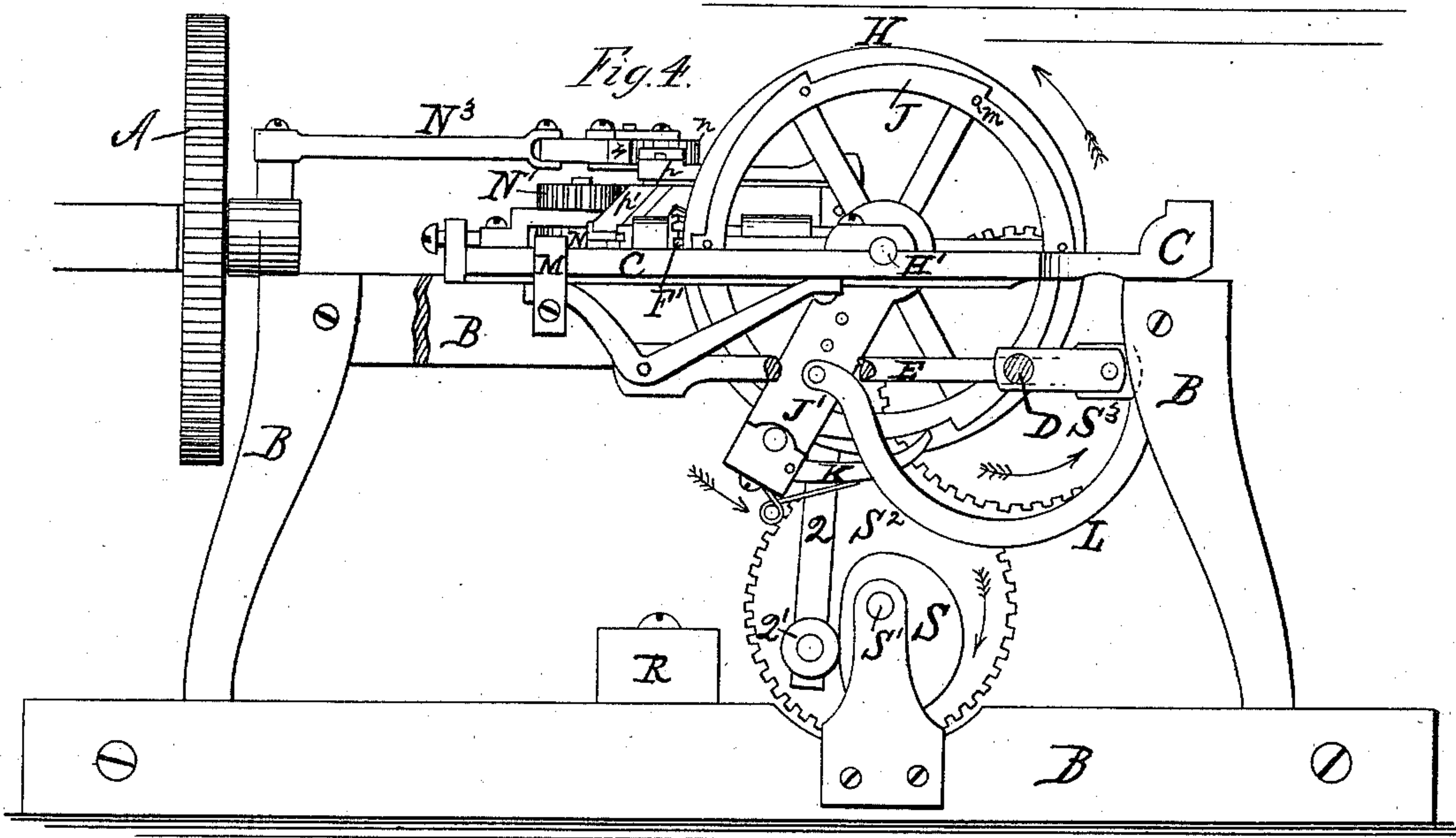
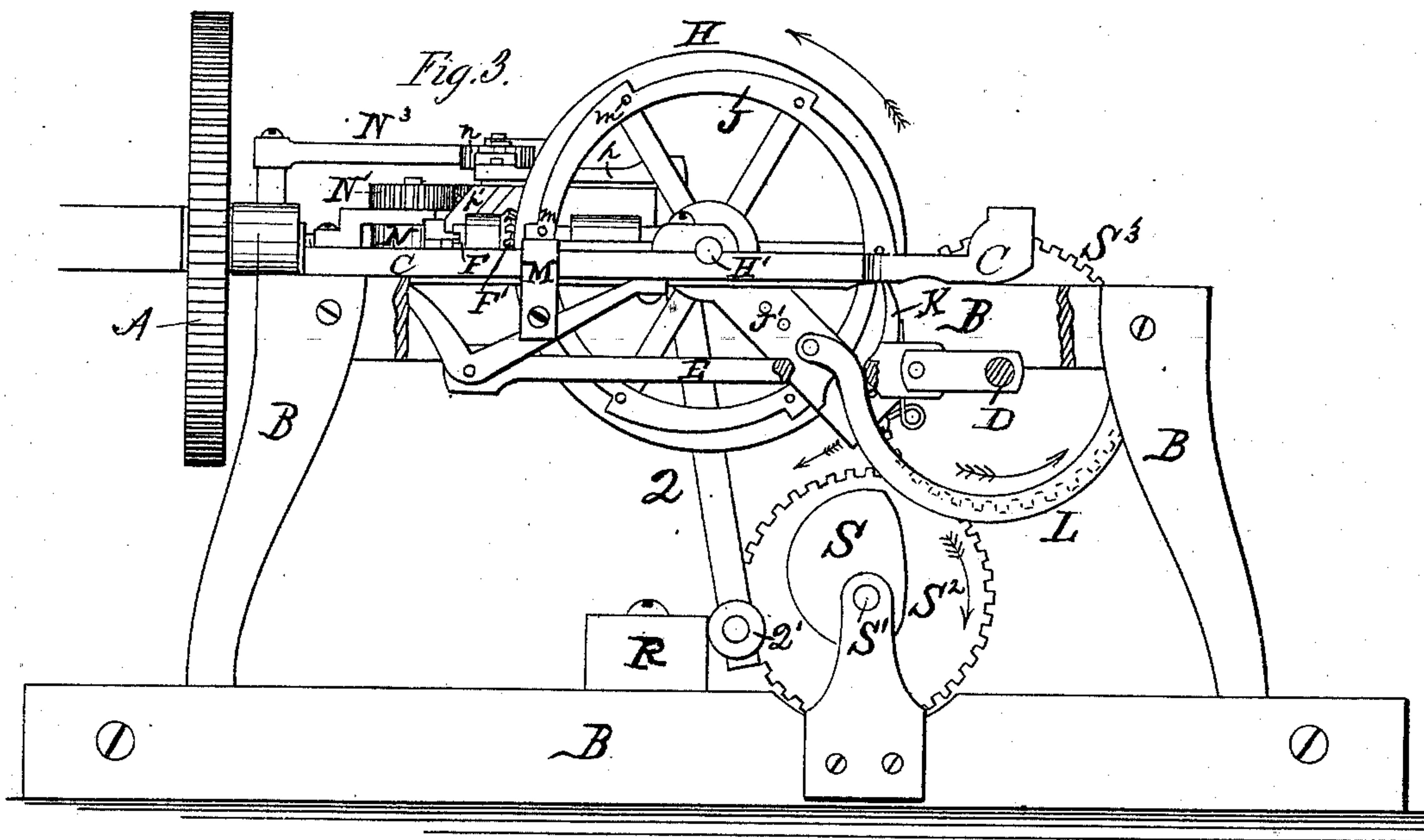
Fig. 2.



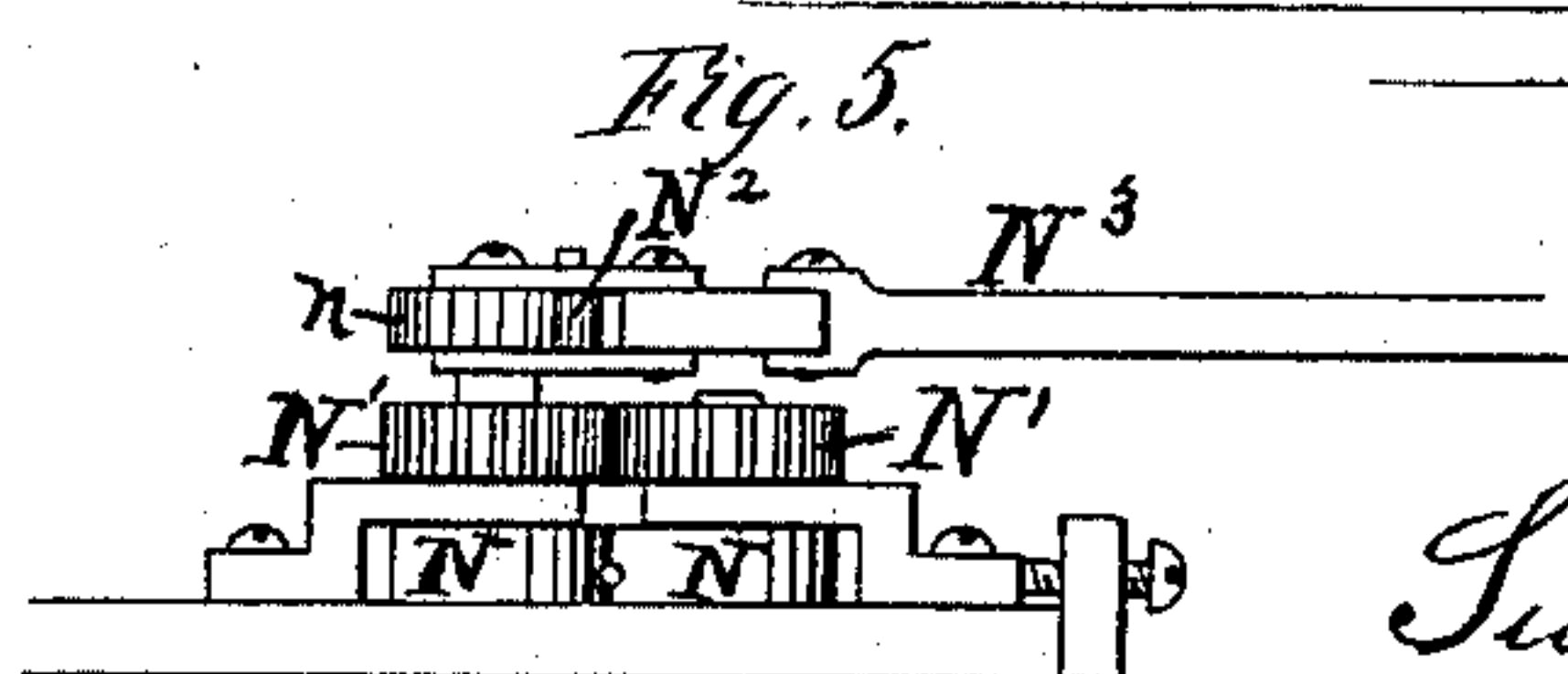
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UNITED STATES PATENT OFFICE.

SIDNEY M. STEVENS, OF DE KALB, ILLINOIS.

IMPROVEMENT IN BARB-FENCE MACHINES.

Specification forming part of Letters Patent No. **222,608**, dated December 16, 1879; application filed August 19, 1879.

To all whom it may concern:

Be it known that I, SIDNEY M. STEVENS, of De Kalb, in the county of De Kalb and State of Illinois, have invented certain new and useful Improvements in Barb-Fence Machines, of which the following is a specification.

In the accompanying drawings, which form a part of this specification, Figures 1 and 2 are plan or top views of the machine, showing it with the mechanism in different positions. Fig. 3 is a side elevation of the machine in the condition shown by the plan, Fig. 1. Fig. 4 is a like view of the machine in the position shown at Fig. 2. The Figs. 3 and 4 are partly in section. Fig. 5 is a detail view, in elevation, of the barb-wire feed-rollers. Fig. 6 is a similar view of the barb-wire cutters.

I purpose using, in connection with this machine, any suitable apparatus for spooling or twisting and spooling the barbed wire with which my mechanism to be hereinafter described will co-operate in combination; but I have not deemed it necessary to do more in this than show the gearing at $A A' A^2 A^3 A^4$, which connects such twisting, or twisting and spooling, devices with the mechanism for applying barbs that is the subject of the present invention.

Any person skilled in these matters may understand how to apply and combine the two mechanisms, the gearing being indicated.

In the drawings, B represents a suitable frame-work, upon which the various parts and devices are mounted in their proper relation and position.

C is a carriage constructed to slide back and forth upon suitable ways on the main frame B. A regular reciprocating motion is imparted to this carriage by means of the crank-shaft D and one or more pitmen, E, which connect said crank-shaft with the carriage.

Mounted upon the carriage, and standing with its axis parallel to the line of motion of the carriage, is the barb-coiling cylinder F. Through this cylinder, which is constructed in the ordinary fashion of barb-coiling cylinders, the main fence-wires G pass longitudinally. Said coiling-cylinder F is furnished with a bevel-pinion, F', which engages the large bevel-gear wheel H, which is also mounted on the carriage, and which has its axis at right an-

gles to the line of motion of said carriage, so that the plane of its motion is parallel to the motion of the carriage.

The side of the wheel H opposite to the gearing is made in the form of a long-toothed ratchet, J, and the pawl is carried in a swinging arm, J', suspended from the shaft H' of the wheel H. K is a pawl, contrived to engage the teeth of the ratchet J.

The arm J', which carries the pawl K, is connected by a pivoted tie-rod, L, to the main or stationary frame-work B of the machine, so that at each forward motion of the carriage (motion to the left hand of the drawings) the pawl engages the ratchet and rotates the wheel with a partial revolution in the direction of the arrows, which is sufficient to impart to the coiling-cylinder the required rotation.

In the backward motion of the carriage the pawl is drawn into position without moving the wheel H; consequently, during the backward motion of the carriage the coiling-cylinder does not rotate.

By this arrangement and combination I obtain the necessary movement of the coiling-cylinder with a proper timing and all necessary speed, with a comparatively slow movement of the gearing always in one direction, and obtain a period of rest of the gearing during the backward motion of the carriage. Of course, it will be understood that a single revolution of the wheel H applies several barbs. In the instance shown in the drawings, one revolution of said wheel applies six barbs; and it will be readily seen that, by changing the proportion, a still greater number could be applied during a single revolution.

In order to prevent the momentum of the wheel carrying it past the required position, I prefer to apply a series of stop-pins, *m*, which, in the forward motion of the carriage and forward rotation of the wheel, successively encounter the stop-plate M, extending up from the frame of the machine and over the carriage. This device insures that the coiling-cylinder shall stop always in a proper position to receive the barb-wire which is fed into it.

The barbed wire is passed between a pair of horizontal feed-rolls, N N, which feed it forward through the knife-block into proper position at the coiling-cylinder. The action of

these feed-rolls is intermittent, and timed to accord with the motion of the coiling-cylinder, so that the barb-wire is fed into the coiling-cylinder during the retreat of the carriage.

The rolls $N N$ are geared together by gears $N' N'$, and are actuated by a pawl, N^2 , and ratchet n , which is connected, by a jointed and pivoted tie-rod, N^3 , to a stationary part of the machine in such manner that the motion of the carriage actuates the feed-rolls intermittently.

The cutters for severing the barb-wire and pointing it at the same time consist of two blades, P and P' , also mounted upon the carriage, one, P , being stationary, and the other, P' , being movable. The knife P' is carried in a block, p' , which moves in a recess in the knife-block p , which is stationary on the carriage.

A lever, Q , pivoted at q to the block p , and below that pivoted to the block p' at q' , extends down below the machine, and imparts motion to the knife at the proper time, as follows: The roller Q' , at the lower end of said lever, strikes, in the forward motion of the carriage, against a stop, R , fixed to the framework of the machine, and the carriage moving onward causes the lever to retract the knife, as will be readily understood, and as indicated in Figs. 3 and 6. The backward motion of the carriage carries this same roller into contact with the cam S on the shaft S' , actuated by the gears $S^2 S^3$, in the manner indicated in Fig. 4. This cam S , being constantly in motion through said gearing from the shaft B , forces forward the end of the lever Q at the proper instant—*i. e.*, when the carriage nears the end of its retreat—and causes the knives to operate to sever the barb-wire by pushing forward the movable blade and its carrying-block.

It will be noticed that in this machine not only does the cylinder move with the main wire forward in the act of coiling the barb upon it, so that said main wire may, if desired, be fed continuously through the machine, but that also all the other necessary coacting parts of the barbing mechanism—namely, the feed for the barb-wire, and the knives for cutting off the barb—move with it upon the same carriage. This, of course, simplifies the structure greatly, and at the same time tends to make the timing and intervals more accurate and uniform, and less liable to derangement. It will also be noticed that the machine moves with a deliberate action, without sudden and violent stopping and starting, and without more motion of the parts than is necessary to accomplish the work. It will also be understood that the barb-feeding device, timed, as it is, to operate during the retreat of the carriage, and the cutting devices also operating at this movement, and moving with the carriage, saves time and obviates the necessity of any pause in the motion of the machine for allowing the barb to be fed in.

I claim—

1. In a machine for applying barbs to fence-wire, the combination of a barb-feeding device, a barb-cutting device, a barb-coiling device for coiling the barb upon the main wires, and a reciprocating carriage upon which all of said devices are mounted, substantially as specified.

2. The combination, with the moving carriage, of the coiling-cylinder and its pinion, the large gear-wheel and the pawl for actuating the same, connected by a pivoted tie-rod to the stationary part of the machine, substantially as specified.

3. The combination of the reciprocating carriage, intermittent gear-wheel, coiling-cylinder and pinion, barb-cutters, and feed-rolls with a crank-shaft and pitman for imparting a reciprocating movement to said carriage, substantially as specified.

4. The device for operating the barb-cutters, consisting of a lever pivoted to the moving carriage, also to the moving blade of the cutters, and extending below in a position to be operated upon by the stop R and cam S , and said stop and said cam, substantially as specified.

5. In a machine for applying barbs to fence-wire, the combination of a barb-feeding device, a barb-cutting device, and a device for coiling the barb upon the fence-wire, all reciprocating in line with the fence-wire, and moving simultaneously in such reciprocation, and means for imparting such reciprocation, substantially as specified.

6. In a machine for applying barbs to fence-wire, the combination of a barb-feeding device, a barb-cutting device, and a device for coiling the barb upon the fence-wire, all reciprocating simultaneously, and timed to operate substantially as specified, to wit: the coiling device during the advance movement in said reciprocation, and the feeding and cutting devices during the retreat in said reciprocation, with means for imparting said reciprocation, essentially as set forth.

7. The combination of simultaneously-reciprocating barb-feeding, barb-cutting, barb-coiling devices, and means for imparting said reciprocation when said feeding, cutting, and coiling devices are timed to operate as follows, viz: the coiling during the forward movement in said reciprocation, the feeding during the backward movement, and the cutting at the completion of the said backward movement, substantially as set forth.

8. The feed-rolls mounted upon a reciprocating carriage, and intermittently actuated by a ratchet and pawl, the latter being connected with the stationary frame, in combination with the carriage and the ratchet and pawl, substantially as set forth.

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