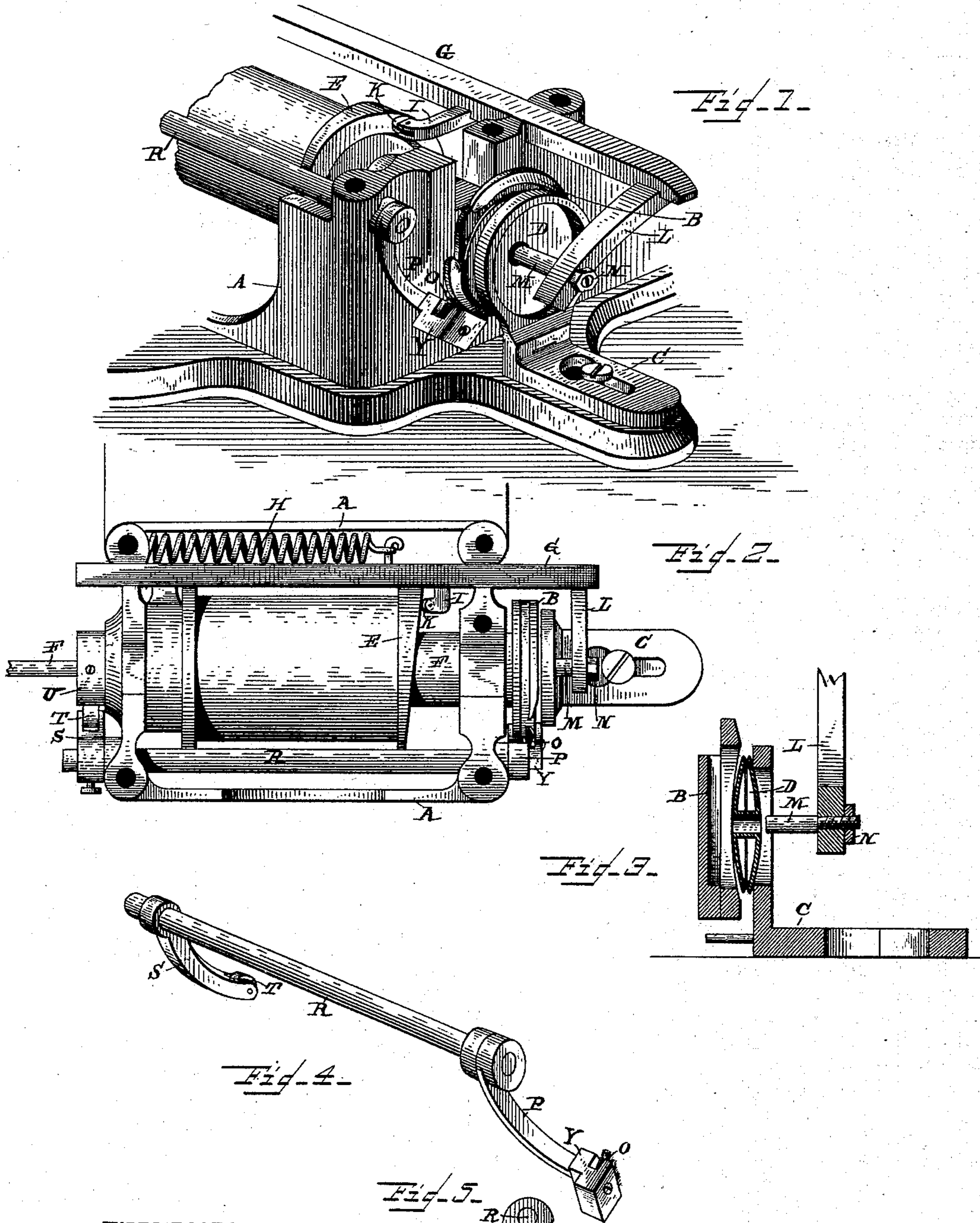


(No Model.)

T. C. HARRIS.
SEWING MACHINE.

No. 410,277.

Patented Sept. 3, 1889.



WITNESSES

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THOMAS C. HARRIS, OF TROY, NEW YORK, ASSIGNOR TO T. C. HARRIS & CO.,
OF SAME PLACE.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 410,277, dated September 3, 1889.

Application filed September 27, 1887. Serial No. 250,835. (No model.)

To all whom it may concern:

Be it known that I, THOMAS C. HARRIS, of Troy, in the county of Rensselaer and State of New York, have invented certain new and
5 useful Improvements in Sewing-Machines, of which the following is a clear, full, and exact description.

My invention relates to those machines in which a rotating or oscillating looping-hook or
10 shuttle is used in connection with a bobbin and a needle, and in which a brush is used to retard the escape of the needle-thread loop from the hook. These machines are subject to two objections which it is the aim of my
15 invention to overcome—first, the excessive wear and friction upon the bobbin due to its being sustained at the periphery, and, second, the difficulty of so adjusting the brush in relation to the hook that it will be certain to
20 arrest the thread without detaining it too long.

My invention consists, essentially, in combining with the rotary looping-hook a stationary bobbin-support and an intermediate bobbin, a central reciprocating spindle adapted to enter the bobbin and serve as its sole
25 support, and suitable mechanism to thrust the spindle into and withdraw it from the bobbin during each rotation of the hook.

I prefer to attach the shuttle-supporting
30 spindle to a slide actuated by a cam on the shaft which carries the looping-hook, and I have represented this arrangement in the drawings; but these details may be modified within the range of mechanical skill, the only
35 requirement being that the bobbin-sustaining spindle should be thrust into and withdrawn from the spindle during the formation of every stitch.

I am aware that rotary-shuttle drivers have
40 been provided on opposite sides of the center with two reciprocating pins which engage the shuttle alternately to impart a rotary motion thereto; and I am also aware that a bobbin seated in and peripherally supported by a rotary
45 hook has been kept in place by a central pressure-screw bearing against its outer face, and to such constructions I lay no claim, my invention having reference solely to the combination of the bobbin with the mechanically-
50 operated spindle, which is adapted to serve as the central and sole support therefor.

My second improvement consists in combining with the hook and the brush automatic mechanism by which the brush is advanced to and held against the hook for the proper
55 period during the formation of each stitch, and then retracted at the proper time to permit the escape of the needle-thread.

I am aware that brushes have been supported by screws and other adjusting devices
60 which admitted of their being moved to and from the hook. My invention in this regard is confined to a combination in which the brush is located at the lower part of the bobbin to retain the needle-thread loop, and com-
65 bined with suitable mechanism to cause its advance and retreat during the formation of each and every stitch.

In the accompanying drawings, Figure 1 is a perspective view of the looping-hook and
70 adjacent parts of a sewing-machine provided with my improvements, the cloth-plate, the needle, and other customary parts being removed to expose other parts to view. Fig. 2 is a top plan view of the same. Fig. 3 is a
75 vertical axial section through the hook, bobbin, and adjacent parts. Fig. 4 is a perspective view of the brush and its supporting devices. Fig. 5 is an end elevation of the brush-
80 operating devices.

Referring to the drawings, A represents the bed or frame, B the rotary looping-hook, C the stationary annular bobbin-support, D the lenticular bobbin mounted between the hook and the stationary support, and E the cam
85 which is carried, together with the looping-hook, by the main shaft F.

The foregoing parts, together with the feed and needle mechanisms, are all of ordinary construction and familiar to those skilled in
90 the art.

M represents my bobbin-sustaining spindle, located at the outer side of the bobbin and rigidly attached to an arm L on a bar G, which latter is arranged to slide horizontally in
95 guides or bearings in the frame parallel with the main shaft.

The spindle is so formed and located that as the bar or slide G moves to and fro the end of the spindle is first carried centrally into
100 the bobbin and then withdrawn entirely therefrom to permit the passage of the needle-

thread thereover. On entering the bobbin the spindle lifts the same slightly until its lower edge is out of contact with the hook and with the support C. Being thus supported wholly by the spindle, the bobbin may turn easily and without appreciable wear or friction at the periphery. The slide is drawn endwise to thrust the spindle into the bobbin by a spring H, attached at one end to the slide G and at the other end to the frame. A reverse movement of the slide is caused by the feed-cam E acting against an arm or roller on the slide, as shown.

With the exception of the spindle and its operating device, the machine is practically the same as those now in general use, the bobbin being held against lateral motion by the hook on the one side and the support C on the other. During the moment that the spindle is withdrawn the shuttle is sustained by a bearing at the lower edge between the hook and the stationary support, as usual. The parts are so timed that the spindle is withdrawn at the instant when the needle-thread loop is required to pass over the center of the bobbin.

Passing to the second part of my invention, O represents the loop-detaining brush located below the looping-hook in position to act against its periphery in the usual manner. It is seated in a block Y, fixed to the end of an arm P, which is in turn secured to a rock-shaft R, mounted in suitable bearings in the frame or bed parallel with the main shaft. This rock-shaft is provided with a second arm S, the end of which, with or without a roller T therein, bears against a cam U on the main shaft F. A spring V, acting beneath the arm S, serves, through the intermediate parts, to hold the brush in operative position against the hook. At the proper time, when the needle-thread loop is to continue its course over the bobbin, the cam U rocks the shaft and throws the brush away from the hook, to which it is again returned in time to engage the next loop. The essence of my invention in this regard lies in having the brush thrown positively to and from the edge of the hook. A skilled mechanic will perceive that the intermediate connections for removing the brush are not of the essence of the invention, but may be variously modified.

I am aware that two stationary spindles arranged end to end on opposite sides of the point at which the needle descends have been combined with a spool and mechanism for thrusting the same endwise through a needle-thread loop from one spindle to the other; and I am also aware that a bobbin composed of two parts united by a central pivot has been combined with an outside sustaining-

arm by which one of the parts is held against rotation; and to such structures I lay no claim, my invention having reference only to machines in which the bobbin remains at all times in substantially the same position, and in which the supporting-spindle is thrust directly into and withdrawn from the bobbin at each rotation of the hook.

I am also aware that an automatically-reciprocating brush has been used in connection with a thread-carrying needle to open the loop that a looping-hook may enter the same.

I am further aware that a rotating looping-hook has been combined with a brush acting at its point adjacent to the needle to insure the entrance of the point of the hook into the loop of the needle-thread; and to these devices I make no claim, their object and effect being to insure the engagement of the hook with the needle-thread, while my brush mechanism is to act at a different time in a different relation to the hook and with a different effect.

Having thus described my invention, what I claim is—

1. In a sewing-machine, the rotary looping-hook, the stationary bobbin-support, and the intermediate bobbin, as usual, in combination with the central reciprocating spindle adapted to enter the bobbin and serve as its sole support, and suitable operating mechanism, substantially as shown, acting to thrust the spindle into and withdraw it from the bobbin during each rotation of the hook.

2. In a sewing-machine, the rotary looping-hook, the bobbin, and the stationary bobbin-support, in combination with a spindle to enter the bobbin, its sustaining-slide, and the cam and spring to actuate the slide at each rotation of the hook.

3. In combination with the looping-hook, its shaft, and the cam thereon, the rock-shaft, the brush carried at one end of said shaft, the cam-actuating arm at the other end of said shaft, and the spring.

4. In a sewing-machine, the rotary looping-hook, the needle and the peripherally-acting brush at the lower part of the hook to retain the needle-thread loop, as usual, and the freely-movable brush-support, in combination with mechanism, substantially as described, for moving said brush to and from the hook at each rotation of the latter.

In testimony whereof I hereunto set my hand, this 23d day of August, 1887, in the presence of two attesting witnesses.

THOMAS C. HARRIS.

Witnesses:

HERBERT D. BAILEY,
R. H. THURMAN.